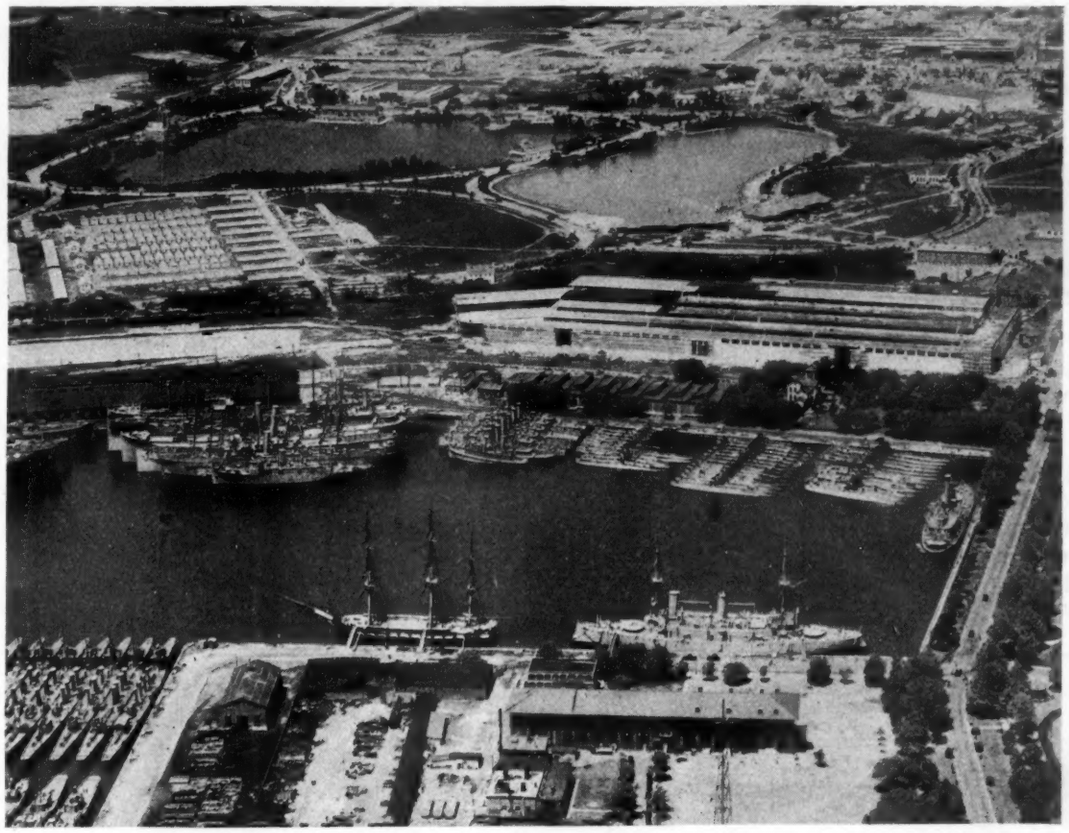
"SESQUI" BUILDINGS MADE PERMANENT, WITH STEEL



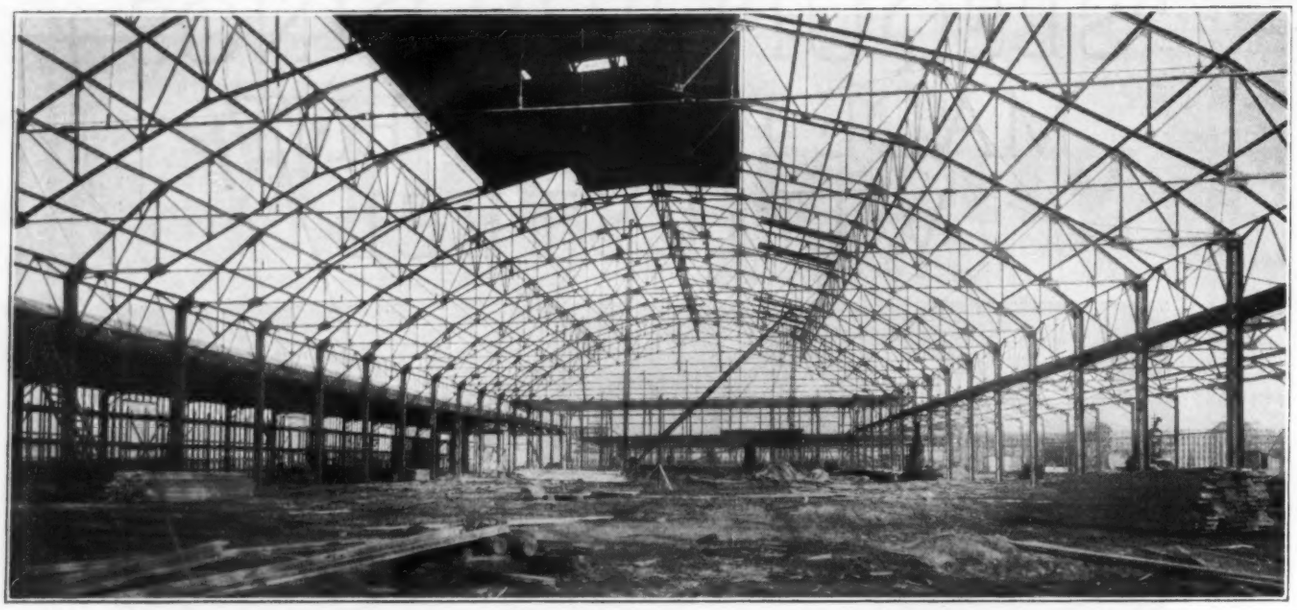
Portion of exposition showing navy exhibits, with League island, Camp Anthony Wayne and Treasure island

PHILADELPHIA'S sesqui-centennial international exposition, celebrating the one hundred and fiftieth anniversary of American independence, was not fully completed and organized when opened to the public June 1. Some of the smaller buildings were only started, and many exhibits still were to be installed. But the whole show now is being materialized with a speed bordering on magic and it looks as though everything will be shipshape and in full swing at the exposition about July 1.

Superlatives may be used freely in describing the exposition. Even the persistent skepticism of Philadelphia is being overcome; a majority of the citizens there long refused to believe the exposition would be held. They now are finding that it has been built on a scale which makes it one of the country's marvels. Many gigantic buildings have been reared where a few months ago there was only swamp land. There is a new stadium with capacity for 100,000 people. The Canadian Pacific railway has reproduced on a large scale, out of stucco, some of the wonderful mountain scenery along its right of way.

India has reproduced the famous Taj Mahal. There are many reproductions of historical value, such as Mt. Vernon, the old barracks at Trenton, the Longfellow house, Sulgrave Manor; old High street in Philadelphia, Wicaco Fort and a Friends' meeting house of the seventeenth century. The government is operating a mint and a model post office. There are encampments from all branches of the war department. The navy has a fine exhibit at League island which is directly connected with the exposition grounds. There are Treasure Island, the Nuernberg market place, a reproduction of a Rumanian village. There are reproductions of streets in Cairo, and streets in Canton, China.

These are only mentioned as a few hints of what is to be found at the exposition. In fact, 1010 acres have been so utilized that the exposi-



EXPOSITION BUILDINGS ARE OF PERMANENT STEEL CONSTRU CTION. THIS PHOTOGRAPH WAS TAKEN DURING THE ERECTION OF THE AUDITORIUM

tion forms a fairly complete cross-section of all branches of the civilization and culture of the present day. The total cost of the exposition to date has been $23,320,000.

The care which has been given to the task of handling immense crowds at the exposition is manifest on every side. Mammoth parking grounds have been provided which will hold thousands of automobiles, and the grounds are right alongside the gates to the exposition features. There never was an affair of this character where the visitor could see everything with less physical exertion.

Inside the gates there are long passenger busses with benches running lengthwise on both sides. The busses make a complete circuit of the exposition grounds, discharging and taking on passengers at all points. There are playgrounds for the children of different ages. There is every conceivable kind of facility for the comfort of the traveling public.

What may be expected in attendance

THE STADIUM HAS SEATING CAPACITY FOR 100,000 PERSONS. THIS IS HOW IT APPEARED ON THE OPENING OF THE EXPOSITION, JUNE 1

when the vacation season starts in earnest is indicated by the crowds that already are pouring in. Automobiles in the parking grounds bear the license plates of all states from Maine and Florida to California. A great many of the visitors have brought tents.

Those who are authorities on such matters as attendance at world's fairs and expositions estimate that 36,000,000 people will visit the exposition in Philadelphia, prior to the times it closes on Dec. 1.

A huge tonnage of steel has been absorbed in the construction of the exposition. The Turner Construction Co. bought 360 tons of structural steel for the Palace of Fine Arts, 800 tons for the auditorium, 120 tons for the pageantry stage and 1200 tons of concrete reinforcing bars for the stadium. Frank G. English & Son bought 40 tons of steel for the construction of the Liberty bell which towers out in front of the expositions gates. Michael Melody & Son Co. bought 2500 tons of structural steel for the Liberal Arts building, 2200 tons for the Transportation building and 1000 tons for the Tower of Light; in addition they bought about 500 tons of concrete reinforcing bars, pile caps and other steel for these structures. The F. W. Mark Construction Co. bought 500 tons of structural steel for the Pennsylvania state building. The Austin Co. bought 1650 tons of structural steel for the Agriculture building, 600 tons for the Education building and 75 tons for the United States post office building; in addition it bought about 60 tons of concrete reinforcing bars for these buildings. The Alexander Read Construction Co. bought considerable steel for the Pittsburgh building. The Philadelphia-Rapid Transit Co. and the Pennsylvania Railroad Co. each laid several hundred tons of track in lines to the exposition grounds. Much tonnage was used in miscellaneous purposes, such as fences, gates, railings, animal cages, pipe lines, steel in smaller buildings, lighting devices, road work, signaling devices, etc.

Visitors to the exposition who expect to find a large representative display of industrial equipment will be disappointed, unless as the event gains momentum hundreds of manufacturers join the few who now are exhibiting their products. Failure of industry to participate can be traced directly to two factors. The first and most important is that the early plans for the exposition were indefinite and so hopelessly involved in political wrangling that prospective exhibitors could not be sure that the show actually would be held. The second deterrent to those who considered participating in the exposition was the cost, which to many prospective exhibitors seemed high in proportion to the benefits.

For these and perhaps other reasons the list of exhibitors thus far announced is far from representative in any important industry. Just how much the list will grow as time goes on is a matter for conjecture. As an indication of the loose manner in which many of the details have been handled, it may be stated that leading companies in certain industries received their first invitations to participate as recently as a week ago.

STATUE SYMBOLIZING THE STEEL INDUSTRY, SIXTY FEET IN HEIGHT, OF STUCCO PLASTER, IN THE COURT OF HONOR, PRESENTED BY THE JONES & LAUGHLIN STEEL CORP.

Among the steel companies which already have arranged exhibits are the Bethlehem Steel Corp., the Jones & Laughlin Steel Corp., the Allegheny Steel Co., the Oliver Iron & Steel Corp. and the Pittsburgh Steel Products Co. Among the other exhibitors are the following:

Abram Cox Stove Co., Philadelphia; National Radiator Co., Philadelphia; American Radiator Co., Philadelphia; Roberts & Mander, Philadelphia, heating appliances; Rudd Mfg. Co., Pittsburgh, water heaters; Crane Co., Chicago, plumbing; American Nokol Co., Chicago, oil burners; J. Wiss & Sons Co., Newark, N. J., hardware; Sward Burners, Inc., Philadelphia, oil burners; Spencer Turbine Co., Hartford, Conn., machinery; Silent Automatic Corp., Philadelphia, oil burners; Westinghouse Electric & Mfg. Co., Pittsburgh, electric equipment; Delco Light Co., Dayton, O., lighting systems and pumps; John Eisele, Clementon, N. J., foundry equipment; Schutte & Koerting Co., Philadelphia, machinery; U. S. Cast Iron Pipe & Foundry Co., Burlington, N. J.; Morse Chain Co., Ithaca, N. Y.; Simplex Valve & Meter Co., Philadelphia, machinery; R. D. Wood & Co., Philadelphia, cast iron etc.; U. S. Electric Tool Co., Cincinati, O., electric tools; Bessemer Gas Engine Co., Grove City, Pa., internal combustion engines; Ames Shovel & Tool Co., Boston, shovels; Tyler Tube & Pipe Co., Washington, Pa., boiler tubes; Pierce, Butler & Pierce, New York, steam engines; Stanley G. Flagg Co., Philadelphia, iron pipe fittings; Olsen Testing Machine Co., Philadelphia, testing machinery; Standard Shop Equipment Co., Philadelphia, machine tools; Anthracite Operators' conference, anthracite; American Pulley Co., Phiadelphia, machinery; Baldwin Locomotive Works, Philadelphia; Fairbanks Co., New York, valves scales, trucks; Molby Boiler Co., Lansdale, Pa., steam boilers; Bristol Co., Waterbury, Conn., recording instruments; General Electric Co., Schenectady.

Train Carries $500,000 Worth of Tungsten Ore

A TRAINLOAD of tungsten ore valued at $512,910 recently was delivered over the New York Central lines from Weehawken, N. J., to Niagara Falls, completing a 10,000-mile journey of the ore from the interior of China. This was said to be the most valuable trainload of ore ever hauled by any railroad. It consisted of 20 box cars, containing bags filled with the ore. The ore came from the mines of the China Commercial Co., and was consigned to the Electro Metallurgical Co., for account of the Crucible Steel Co. of America.

For trade reasons the exact amount of ore is not given. However, it is probable that the amount was between 40,000 and 50,000 units of tungsten content the market value of which at present is around $10.75 a short ton unit. A unit is 1 per cent of a ton, or 20 pounds, the value of such ore being measured by the number of units of the element. The amount of ore probably is sufficient for producing several months' supplies of ferrotungsten for the Crucible company.

Tungsten is the heaviest of all the metallic elements, being two-and-one-half times as heavy as iron, while its melting point is 5915 degrees Fahr. far higher than any other known metal. Mixed with steel, it enters into the manufacture of high speed cutting tools and for guns as well as in the making of certain kinds of saws, punches and dies.

Metallic tungsten is obtained through the reduction of ores and is a gray, granular mass, but if wrought, looks like iron or steel and can be polished. Like zinc, its structure is changed by working but, unlike that metal, it develops great tensile strength and can be drawn into a filament so fine that one pound of it will be nearly a mile-and-one-half long, just enough to make 25,000 electric lamps of the 25 watt size.

The deposits of tungsten in China have been known only for 10 years. The mines in that country now produce more of the metal than any other section of the world. The first deposits were discovered in the southwestern part of Kiangsi by a German priest, but it was Chan Ku Lee, of the Kong Ku On Mining Co. who first located deposits in northern Kwong, from which large quantities are shipped.

The almost incessant internecine trouble in the south of China have had a serious effect on the mining of tungsten and property after property has been abandoned, the main source of supply for the last two years having been the Shi Wai Sham district, which lies about 600 miles north of Canton. At first shipments were brought down over the mountains direct to Canton, but the growing disorders in the south caused the abandoment of this route. In one instance the company was forced to pay $50,000 ransom to bandits for the release of five of its men. Shipments were later brought out by way of Nan Chang, Kiukiang and down the Yangtsi river to Shanghai. In America this distance would be covered in about 24 hours. There it takes six weeks.

When the ore leaves the mine it is carried some 15 miles down the mountain to the concentrating sheds, where it is crushed, after which it is dried, sampled and bagged for its 10,000 mile journey to the markets of the world.

Coolies with shoulder poles carry the ore in two bags of 100 pounds each from the concentrating plant to the river, where it is loaded on sampans. These little boats, because of the shallow river, can carry but one ton each and many times on its long journey to Shanghai it is transferred to larger and still larger boats. At the beginning even the small boats have to be often poled off sandbars.

Directory Gives Complete Lake Ore Data

Iron ore reserves in the state of Minnesota are given as approximately 1,535,750,164 tons, of which 220,000,000 represents low grade nonmerchantable material, in the 1926 edition of the Mining Directory of Minnesota, issued by the Minnesota School of Mines, University of Minnesota. The reserves in Michigan are stated as 188,198,051, as represented by the geological survey division, Michigan department of conservation. The latter estimate is exclusive of low grade silicious ore.

The total tonnage for the two states, for which there is any authority in the records of public documents, thus is 1,723,948,215 tons. On the basis of present consumption this supply would not extend over 30 years. Other factors, however, make it appear that the reserves will last much longer, with beneficiation in wider use.

The reserves in Minnesota show a decrease of only 156,668,527 tons from the estimate in 1915, whereas about twice that amount has been shipped from that state in the meantime, the difference being in new developments.

The directory is a comprehensive publication. There is a map section, a list of mining properties, operating and holding companies; general statistics, list of beneficiating plants; data pertaining to shipments, analyses, dock facilities; trip capacities of lake freighters; prices at lower lake ports, and values at the mines; cost mine labor production records in other states and countries, and a list of men associated with Lake Superior mine operations, and their addresses.

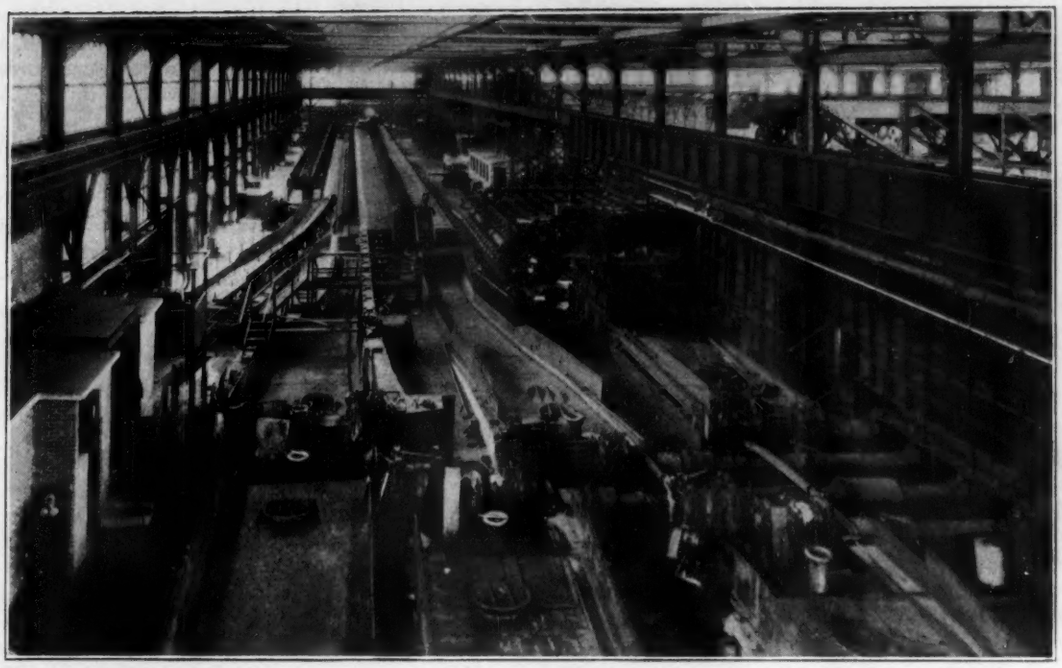
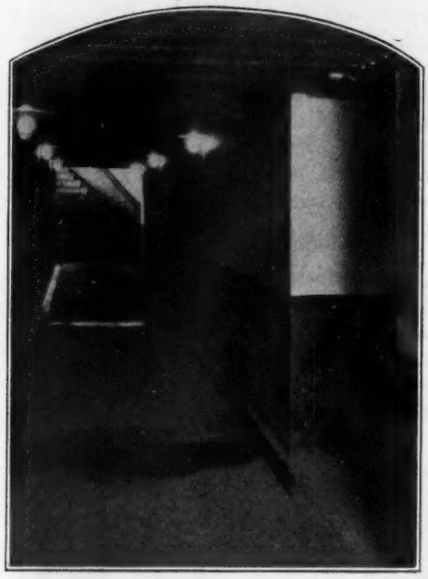


Fig. 1—View of the new 10-inch mill at the Gautier division of the Bethlehem Steel Co. at Johnstown, Pa. This is one of four modern units which recently replaced six merchant mills of early design. Fig. 2—(Left) Manway which permits safe access to all floors of the Gautier mills



Merchant Bar Mills

Now Under Power

Modern Units with Facilities for Handling, Shipping and Warehousing the Products Replace High-Cost Units

By John D. Knox

SHORTLY after acquiring the properties of the Lackawanna Steel Co., the Cambria Steel Co. and the Midvale Steel & Ordnance Co., in 1922 and 1923, the officials of the Bethlehem Steel authorized an $18,000,000 program of modernization and development in order to effect operating economies and larger finishing capacities. The policy of the Bethlehem Steel Co. has been to develop its properties so that each plant will specialize, so far as practicable, upon the steel products to which they are best suited, considering their physical characteristics, layout, the supplying of raw materials and the market which they serve.

The most important part of the Bethlehem Steel Co.'s rebuilding program at the Cambria works, Johnstown, Pa., is the installation of four modern bar mills, with facilities for handling, warehousing and shipping the general products of the units. The Cambria plant, as will be recalled, is one of the oldest and best known steel plants in the country. It has an annual ingot capacity of 1,700,400 tons. It is located in the heart of the bituminous coal region in Pennsylvania and is one of the few steelmaking plants in the world where coal goes direct from the mines into the coke ovens without transportation or storage.

At the Gautier department of the Cambria plant are located the various merchant mills for rolling rounds, squares, flats, automobile rim sections, plates, light-structural shapes and light rails. Except for six mills, which were replaced with four modern mills, the remaining merchant units at this plant are modern and efficient. The modernization program included the replacement of two 8-inch mills, a 10-inch, 12-inch a 13-inch and a 14-inch mill with a 14-inch, 13-inch, 10-inch and 9-inch mill. In considering the installation of these mills, which was estimated would require about 15 months to complete, plans had to be developed to keep the old mills on production as long as possible. The plans were made to take advantage of a triangular plot of ground at the westerly end of the plant, which was of sufficient size to permit the construction of all four mills, including space for a future fifth mill, and the shear building, without disturbing any of the original mills.

The original Gautier plant had been built on the feeder of the old Penn-

FIG. 3—HOT BED OF THE 13-INCH BAR MILL. STOCK IS TRANSFERRED UPON THE BED BY CONE ROLLERS AND FROM THE BED TO THE SHEAR APPROACH TABLE BY SHUFFLE BARS

sylvania canal. Consequently, before laying out the foundations for the buildings and mills, test pits were sunk to ascertain the condition of the soil. The results of these tests prompted the engineers to put in heavy foundations to gravel.

Careful thought was given to the design and material used in the construction of the buildings, with the idea of holding this item of cost to a minimum consistent with good construction. Four buildings are provided, one for each of the new mills. They were designed by the engineering staff of the Cambria division and fabricated in the shops of the company. One of the outstanding features of these buildings is the distribution of light on the mill floors. This is made possible by a wide monitor roof construction and two rows of windows, set in steel sash, in each sidewall; three rows in each end wall. The sash in the monitor roof is fixed and slopes from the top to the bottom so that the panes of glass practically are self-cleaning. A monorail trolley is provided in the monitor to facilitate cleaning the inside of the glass when necessary. Ventilation in each building is had through numerous ventilators installed in the peak of the monitor. These function automatically.

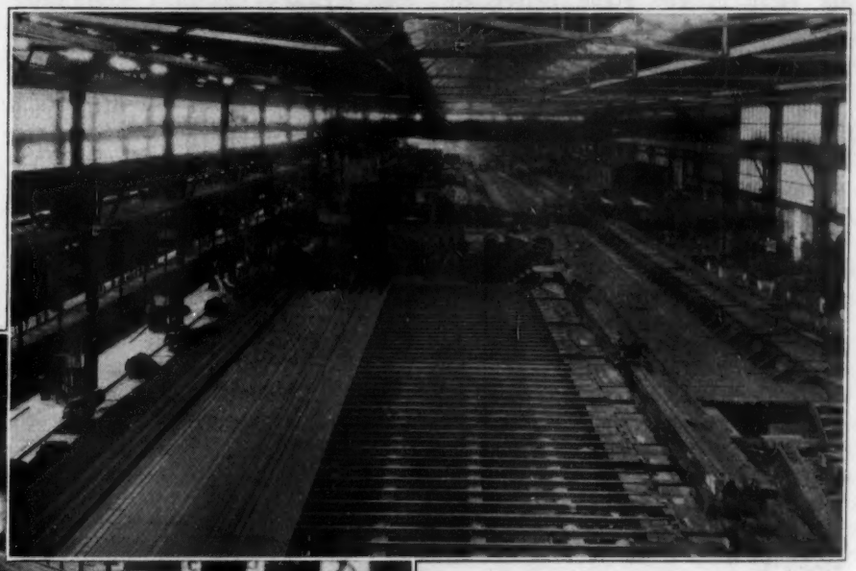
Another important feature in the layout of the buildings, is the means provided for intercommunication between the various mills. A manway tunnel 6 feet wide and 7 feet high extends beneath the new mills. Entrance to this subway is had near the watchman's office at the mill gate. A stairway leads from the tunnel to the floor of each mill. A space of about 2 inches intervenes between each side of the treads and sidewalls of the tunnel. By this construction no corners are provided in which dirt can accumulate. Moreover, by leaving a trough between the sidewalls and the tread of the stairs and between the sidewalls and walkway of the tunnel, washing the surfaces with a hose is a comparatively easy matter. A 16-foot driveway skirts the ends of the new mill buildings and affords means of trucking repair parts and supplies to the various mills. Another feature of the installation is that all billet storage yards are parallel to the mill buildings. By this arrangements a drag of eight to ten carloads of semifinished steel can be spotted in the billet yards beneath the various cranes without the locomotive having to enter the building and thus polluting the atmosphere with smoke.

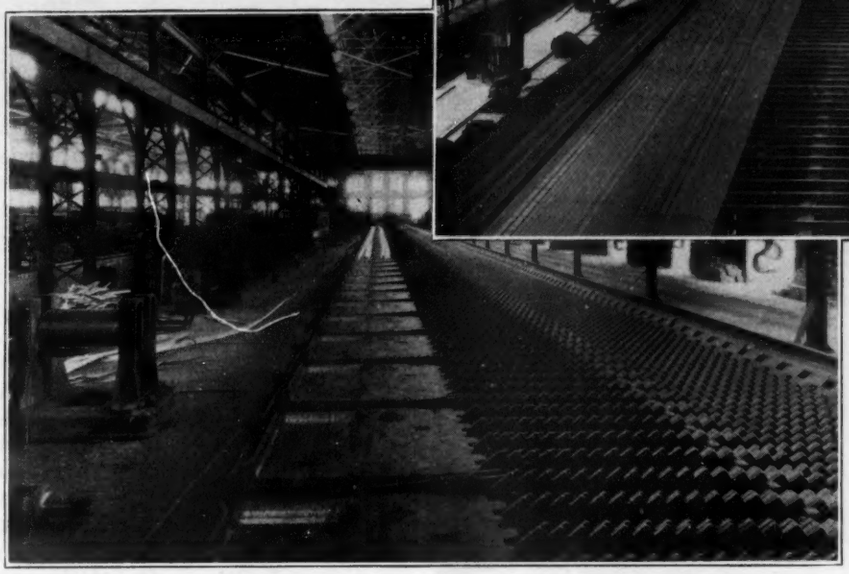
Jobbing Mill Provided

The 9-inch mill is primarily a jobbing unit and is designed to roll miscellaneous shapes. It is served by a heating furnace 17 x 25 feet. The heated billets are pushed from the furnace by an electrically-driven ejector

FIG. 4—VIEW OF THE 9-INCH MILL IN OPERATION. THIS MILL PRIMARILY IS A JOBBING UNIT AND INCLUDES FOUR STANDS OF 12-INCH ROLLS IN TANDEM AND FIVE STANDS OF FINISHING ROLLS IN TRAIN

FIG. 5—(BELOW) COOLING BED WHICH SERVES THE 10-INCH MILL. THE RACK FOR ROLL STORAGE IS SHOWN AT THE LEFT. FIG. 6—(RIGHT) FINISHING END OF 14-INCH MILL. TWO HOT SAWS ARE USED TO CUT SECTIONS TO SPECIFIED LENGTHS





into the first set of roughing rolls. This train includes four stands of 12-inch rolls arranged in pairs and tandem, driven by a 1000-horsepower motor. The finishing mill includes five stands, two 3-high stands and two 2-high stands, of 9-inch rolls driven by a 1000-horsepower motor and one 2-high stand driven by a 500-horsepower motor. Stock either is looped from one stand to another or is run out on chutes, when it is to be fed into an adjacent stand of rolls. The steel leaving the last pass is taken away from the mill on a cone roller runout table, dropped into a V-notch, from which it is lifted by a carryover bar and transferred across a flat hot bed 220 feet long to another roller table which leads to a shear at the end of the mill.

Merchant Sizes Are Produced

Adjacent to the 9-inch mill building is the building which houses the 10-inch mill. This mill is more of a tonnage unit and is designed to produce such sections as rounds, squares, flats and concrete bars. It is served by a 30 x 32-foot heating furnace from which the heated billets are discharged by an electrically-driven pusher. The roughing train is continuous and includes four stands of 12-inch rolls installed in tandem. The train is driven by a 2000-horsepower motor. The finishing train includes four stands of 10-inch rolls and two stands of 8-inch rolls which are staggered over the mill floor. The first four stands of this particular unit are driven by a single 1700-horsepower motor through individual spindles geared to the drive shaft of the motor. The last two stands are arranged in train and are driven by a 900-horsepower motor.

Stock is looped from one stand to another in the finishing train, using the four 10-inch stands on heavier sections and the two 8-inch stands additional on the lighter sections. A Rendleman flying shear is positioned between the finishing mill and the cooling bed and is used for cutting the finished sections into convenient hot bed lengths. This is a rotary shear, with the disks set at an angle of 45 degrees to the path of the bar, and operated at a speed that will not retard the section.

A pivoted guide throws the stock into the knives and then back again into the regular path of travel. The knives separate on the reversal of the pivoted guide. The severed pieces pass down a runout table which parallels a 330-foot notched-type, carry-over hot bed. A roller table on the opposite side of the hot bed conveys the cooled section to a motor-driven shear at the end of the mill.

Rounds, squares, flats and concrete bars are rolled in larger sizes by the 13-inch mill than is produced by the 10-inch unit. The 13-inch mill is housed in a building 500 feet long. By reason of the larger sizes rolled by this mill the sections are transferred from one stand to another by roller tables instead of being looped as is done on the 9 and 10-inch mills. Raw material for the 13-inch mill is heated in a 32 x 60-foot continuous furnace. The stock upon leaving the heating furnace passes through the first five stands in tandem. It then is transferred to an adjacent roller table and travels back toward the front of the mill through stands Nos. 6 and 7. Issuing from stand No. 7 the stock is received by a skew Y-table. Upon reversing the rollers of this particular table, the stock is conveyed toward the rear of the mill, passing through stand No. 8 and is again received by a skew Y-roller table. Reversing the rollers of this table moves the stock toward the front of the mill again and through stand No. 9, another skew Y-table receiving the stock after it issues from these rolls. When the stock is free from stand No. 9 the rollers of this particular skew table are reversed and the stock is directed through stand No. 10, passing on a runout table toward the rear of the mill, or the stock may be transferred from stands Nos. 4 to 7 omitting stands Nos. 5 and 6.

Three 1500-horsepower motors drive the ten stands of the 13-inch mill. Two of the motors are connected to the main shaft, driving stands Nos. 1 to 8 inclusive; while the third unit drives stands Nos. 9 and 10. A suitable distance intervenes between the individual stands of this mill so that the sections going through this mill

are clear of one stand before entering the next.

A feature of the 13-inch mill is the hot bed which was designed by the engineering department at the Cambria plant and built in the shops of the Bethlehem company. The finished bars coming from the last stand are received by a runout table equipped with cone-type rollers. When the bar is free of the rolls, the axes of the cone-type rollers are shifted askew which transfers the bar onto the cooling beds. The cone rollers are driven by individual motors of fractional horsepower. The hot bed, 24 x 180 feet, is divided crosswise into 30 notches. The dead load is balanced and when material is in transit over these beds, at no time is more than one-half the weight lifted. Shuffle bars are provided at the discharge side of the hot bed and are driven by eccentrics, 180 degrees apart. These deliver the stock onto a roller table which conveys it toward the rear of the mill to a shear which cuts the material into commercial lengths.

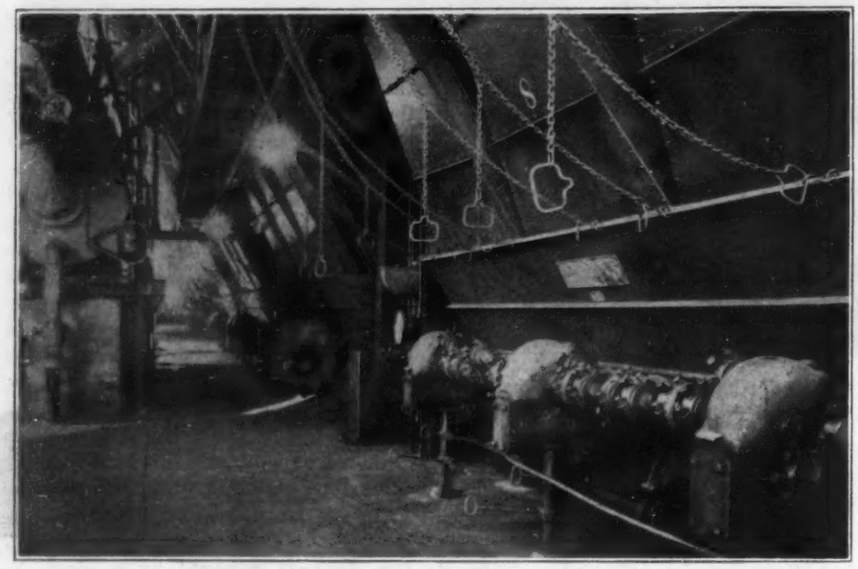


FIG. 7—BOILER HOUSE AT THE FRANKLIN DIVISION OF THE BETHLEHEM STEEL CO., JOHNSTOWN, PA. THE UNITS ARE STOKER FIRED

The 14-inch mill is designed to roll channels, beams, angles, automobile rim sections, rails and flats. This unit is housed in a building 600 feet long and is served by two heating furnaces, one 32 x 56 feet and the other 17 x 42 feet. The layout includes ten stands of rolls, Nos. 1, 2, 3, 4, 5, 6, 9, and 10 being driven by two 1500-horsepower motors coupled together. Stands Nos. 7 and 8 are driven by a single 1500-horsepower motor. The first five stands are arranged in tandem while the other five stands are staggered over the mill floor. A suitable distance intervenes between each stand of rolls so that the steel is clear of one stand before entering the next. The heated billets in passing through the first five stands travel from the front to the rear of the mill. When free of the fifth stand, the piece is transferred from the runout table to an adjacent roller table which directs it through No. 6 stand and toward the front of the mill.

A skew Y-table receives the stock from No. 6 stand and moves it through No. 7 stand where it is received by a second skew-type table. Reversing the rollers of this table moves the stock toward the front of the mill to No. 8 stand. The stock continues to be directed toward the front of the mill over a roller table and passes through stand No. 9. From the runout table of this particular stand the stock is transferred onto a parallel roller table which directs it toward the rear of the mill and through stand No. 10.. The stock may also be taken direct from No. 6 to No. 9 stands omitting stands Nos. 7 and 8. Between the No. 10 stand and the hot bed, two motor-driven hot saws are installed for cutting the pieces into lengths specified. The severed sections continue over the roller table until opposite a hot bed 180 feet long. This bed is of the plain-sweep type and is equipped with individual drag offs.

All heating furnaces, with the exception of the 9-inch mill unit and the auxiliary furnace of the 14-inch mill, are designed to handle 30-foot billets rolled at the Lower and Franklin divisions of the Cambria works of the company. The furnaces use coke-oven gas with tar as an auxiliary fuel. They are equipped with tar and gas meters, a pressure regulator and a control system for maintaining the proper proportion of air and gas. All mills are driven by direct-current, variable-speed motors. The mill tables and other mill auxiliaries also are motor driven. Where possible, all equipment is lubricated from a central oiling system installed on each of the mills. Five 2000-kilowatt motor-generator sets, for converting 6600-volt alternating current into 250-volt direct current, are connected to all mill motors through common bus bars. The latter are installed in a concrete conduit beneath the mill floor and extend from the substation to each of the mill motor houses. Push button controls are provided for each motor. The substation, motor houses and service buildings are finished on the interior with white brick walls and red tile floors.

Spent Oil Reclaimed

A central oil house equipped with circulating pumps, centrifuges and storage tanks is arranged to receive all circulating oil and tar required at the new mills. Contaminated circulated oil from any of the mills is pumped to this station to be reconditioned and then is returned to the mill when required. The finishing ends of all mills terminate in a common shear building. The tracks over which the billets are brought into the 9 and 10-inch mills extend into this shear building by one car length. This arrangement provides a means for the immediate disposal of all scrap which accumulates around the shears.

As previously mentioned, the mills are arranged for securing ideal transportation conditions and combined shipping facilities. A large warehouse divided into three bays parallels the shear building and serves all of the four new mills.

The 9 and 10-inch mills and the 13-inch and 14-inch mill buildings are separated by courts. A spur railroad track runs into each of these courts and near the end of the mill building branches into two tracks which pass through the shear building and terminate in the warehouse. Thus a load of empty cars can be shifted into the warehouse or loaded cars pulled out without any engine smoke being puffed either in the warehouse or mill buildings. Subways are provided beneath the warehouse tracks so that the workmen will not have to climb cars to get from one side to the other.

The installation of the new bar mills necessitated the construction of a new roll shop which was erected at the extreme eastern end of the plant. It is fully equipped with the

latest type of roll lathes, grinders and small tools. The frog and switch plant for manufacturing light-rail frogs and switches was installed in the building previously used as a roll and machine shop. A new power station known as the No. 3 power station was constructed at the Franklin division of the company and contains a 15,000 kilowatt, 6600 volt, 3-phase, 25-cycle, turbo generator unit. This is equipped with surface condenser and carries the full complement of auxiliary equipment. This station connects through 6600 to 2200-volt transformers with the No. 1 and No. 2 power stations and furnishes the additional current required for the new bar mills.

Surveys Refractories for Foundry Use

The joint committee on foundry refractories, composed of representatives of 12 national organizations, is conducting a survey of the service conditions of the refractories used in the different branches of the foundry industry. Subcommittees made up of representative foundry managers and metallurgists have been appointed by the joint committee to look after the detailed work connected with the surveys and to report to the main committee at its meeting to be held during the Detroit convention of the American Foundrymen's association, Sept. 27-Oct. 4.

The subcommittee studying malleable foundry refractories is asking that the malleable foundry managers co-operate with them by supplying such information as each may contribute. To aid in supplying this information, the committee is sending out a questionnaire. The committee believes that the refractories used in malleable foundries are costing too much for the following principal reasons: Too many sizes and shapes of bricks now used where comparatively few sizes and shapes would suffice and improper employment of methods of furnace operation and improper designs in furnace construction. After the data of the questionnaire are analyzed, it is proposed to have field men investigate more fully certain phases of the work.

The Syracuse, N. Y., chapter of the American Society for Steel Treating has elected the following officers for the coming year: Chairman, Walter Bolton, Brown-Lipe-Chaplin division, General Motors Corp.; vice chaiman, W. R. Frazer, Halcomb Steel Co.; secretary-treasurer, S. P. Peskowitz, Halcomb Steel Co.

Proposes New Plan for Employment Data

An announcement from the Russell Sage foundation, New York, says that a plan to forestall periods of extensive unemployment is presented in a report of a study made under the direction of a committee representing the American Statistical association, of which Mary Van Kleeck, director of the foundation's department of industrial studies, is chairman.

The plan calls for the collection of employment statistics by state labor bureaus, with the United States department of labor the co-ordinating center. In addition, the plan commends and urges the extension of the statistics by federal bureaus having a direct relation to certain industries, such as the geological survey for mines and quarries, the interstate commerce commission for railroads, and the department of agriculture for farms, and the reporting of all these data to the federal bureau of labor statistics for prompt publication of national indexes of employment.

How Rope Works Grew

In the May issue of its house organ, *The Yellow Strand*, the Broderick & Bascom Rope Co., St. Louis, sketches the history of the company in the half-century just closing. The sketch departs from tradition in its style and presents entertainingly the reasons for the company's formation and the condition of the country and its industry at its inception. How industry has increased its burdens by the development of powerful machinery, necessitating larger and stronger cables, is presented as a cross section of the world's progress.

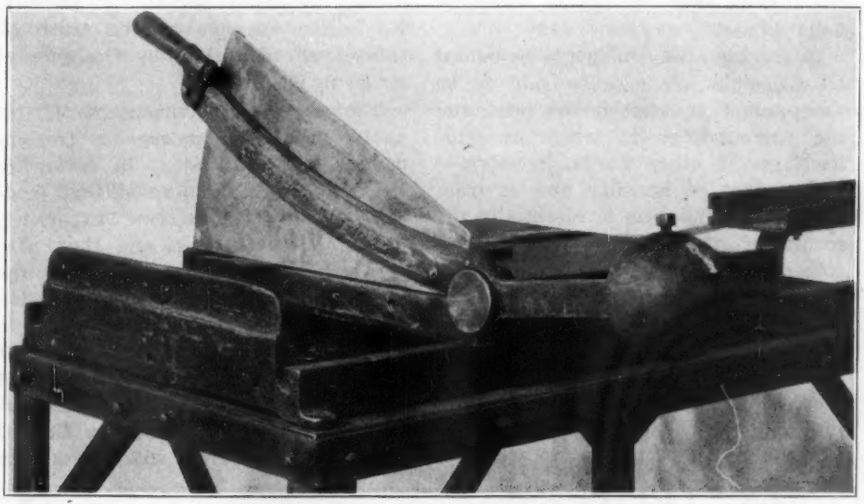
It is an interesting story of progress from small beginnings, well told and carrying a real message.

Shows Growth of South

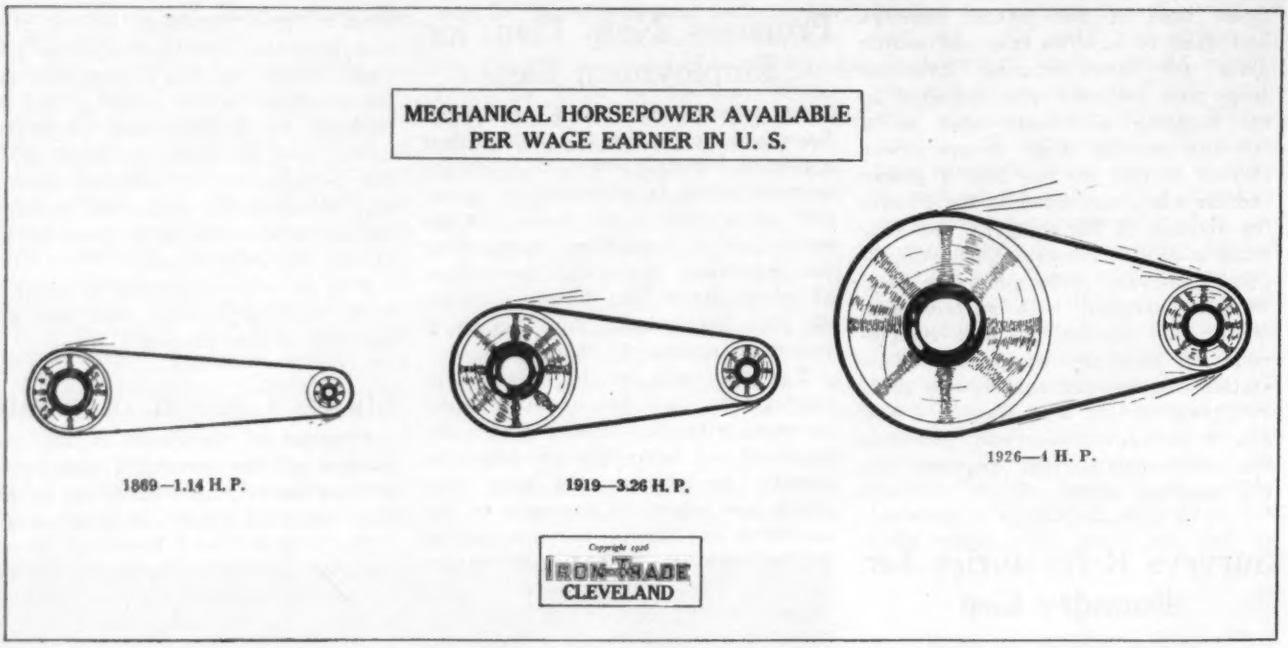
Progress of the South in the first quarter of the twentieth century is covered broadly and in detail in the Blue Book of Southern Progress for 1926, compiled and issue by *Manufacturer Record.* Illustrated articles by the presidents of all the important railroads in the South give an airplane view by men familiar with the entire business structure. Diversification of agriculture, increased ocean traffic, increased manufacturing, larger population and other features of growth are discussed and a wealth of statistical matter is shown.

The book not only presents the facts of past and present growth but sketches trends. It furnishes reasons for continuance of the development now well under way and points to better things for the future than this section ever has enjoyed.

Novel Knife Guard Protects Cutting Edge



THAT safety devices are conducive to increased production is illustrated by the knife guard shown above. This guard, which was devised by an employe of the Baltimore plant of the General Electric Co., consists of a vertically supported plate which shields the knife throughout its travel The knife is made safe and its proper operation is in no way impeded. As a matter of fact, actual practice has demonstrated work to be done faster than when guards of other design were employed.



Industry's "Silent Revolution" —and What It Portends

By Magnus W. Alexander

SCIENCE tells us that man is the product of heredity and environment. In other words, an individual's character and place in life are largely determined by what has been brought to him in the accumulated history of his ancestors and by the current surroundings in which he finds himself.

In the same way, industry as indeed all economic life may be said to be the product of what it has been and the surroundings in which it finds itself; or in other words, industry is the product of heredity and environment. Economic life is essentially the result of the interplay of human forces and the environment in which men exercise their efforts to earn a livelihood. The more primitive men are, the more are they dependent on their environment and the more are they limited by it. Only where highly developed economic organization exists, there is comparative freedom from environment. The modern city dweller has within his daily reach products from all parts of the city, state or nation, and even from the far corners of the globe. A dozen states and nations may, without any effort on his part, contribute to the making of his breakfast. Yet this comparative freedom from economic environment is more apparent than real. While the economic organization functions the relative independence of the individual is secure, but let something go wrong and his precarious isolation stands out sharply. No better example of the truth of this is afforded than by the general strike in England.

The economic environment of industry has been undergoing tremendous changes of late. In reviewing these let us bear in mind that modern industry is a new experience in human civilization and that next to free government it is perhaps the greatest experiment that civilization has yet tried. Mankind has existed in this world for millions of years, but modern civilization is at best not more than five or six centuries old, while the history of modern factory industry is comprised within less than two centuries.

What are the more significant recent changes in the economic environment of industry? Let us look first at population. The population of the world in 1800 *was* 850,000,000. *In* 1900 *it was twice as large. It took ages to produce the first* 850,000,000 *persons, but only* 100 *years to double that number. In the* 24 *years since* 1900 *it increased another* 153,000,000.

In the United States alone, population has been increasing at a rapid rate. In 1870 it was 39,000,000, but 30 years later it had almost doubled, reaching 76,000,000. Since 1900 the increase has been even more rapid and for Jan. 1, 1926, the population was estimated as 115,940,000, an increase of over 10,250,000 since 1920 and of about 40,000,000 since 1900.

Between 1820 and 1920 over 33,000,000 immigrants came into this country and in 1920 of every 100 persons in the United States 35 were foreign born or of foreign parentage. The limitation of immigration, of course, will do much to curtail the rate of increase.

With the damming of the immigrant tide a new and even more striking factor affecting industry has appeared. This has been the increased use of power, to offset the restriction of labor supply without diminishing production. In 1869, the first year for which power statistics were collected in the United States, the number of horsepower available per wage earner in factory, hand and neighborhood industries was 1.14. By 1919 it had increased to 3.26. In 1923 the figure was 3.77 per wage earner and by this time bids fair to be about 4 horse-

Abstract of address at tenth anniversary meeting of National Industrial Conference board, New York, May 20. The author is president of the board.

power. During the World war and particularly since its termination, the industries of the United States have gone ahead in introducing machinery, power and efficient methods at a high rate so that if we compare the year 1914 with the year 1923 we find that for the same unit of production there were required in 1923 13 per cent less installed power, 25 per cent fewer wage earners and 17 per cent less management personnel than in 1914. For each wage earner, hours of work were 7 per cent lower in 1923 than in 1914.

Improvements in organization and in technical processes reflecting increased industrial efficiency and a greater amount of installed power placed behind each wage earner permitted a 33 per cent increase in production per wage earner, while at the same time there was an increase of 19 per cent in the cost of managerial supervision and a 36 per cent increase in the cost of labor.

Another significant change in the economic environment of industry has been the marked development of large-scale production and corporately owned establishments. In 1904 1.3 per cent of the total number of manufacturing establishments in the United States were in the class whose value of product was $1,000,000 or over. This group employed 26 per cent of the total number of wage earners and contributed 38.5 per cent of the total value of manufactured products. By 1923, 5.3 per cent of the manufacturing establishments were in the class with a value of product of $1,000,000 or over per year, but the proportion of the total wage earners in manufacturing that they employed had mounted to 57.1 per cent and the total value of their product to 66.4 per cent. Manufacturing establishments whose value of product was under half a million dollars in the year 1923 comprised nearly 90 per cent of the total number, but employed less than 30 per cent of the wage earners and produced not quite 22.5 per cent of the total value of manufactures.

Agricultural Trend Downward

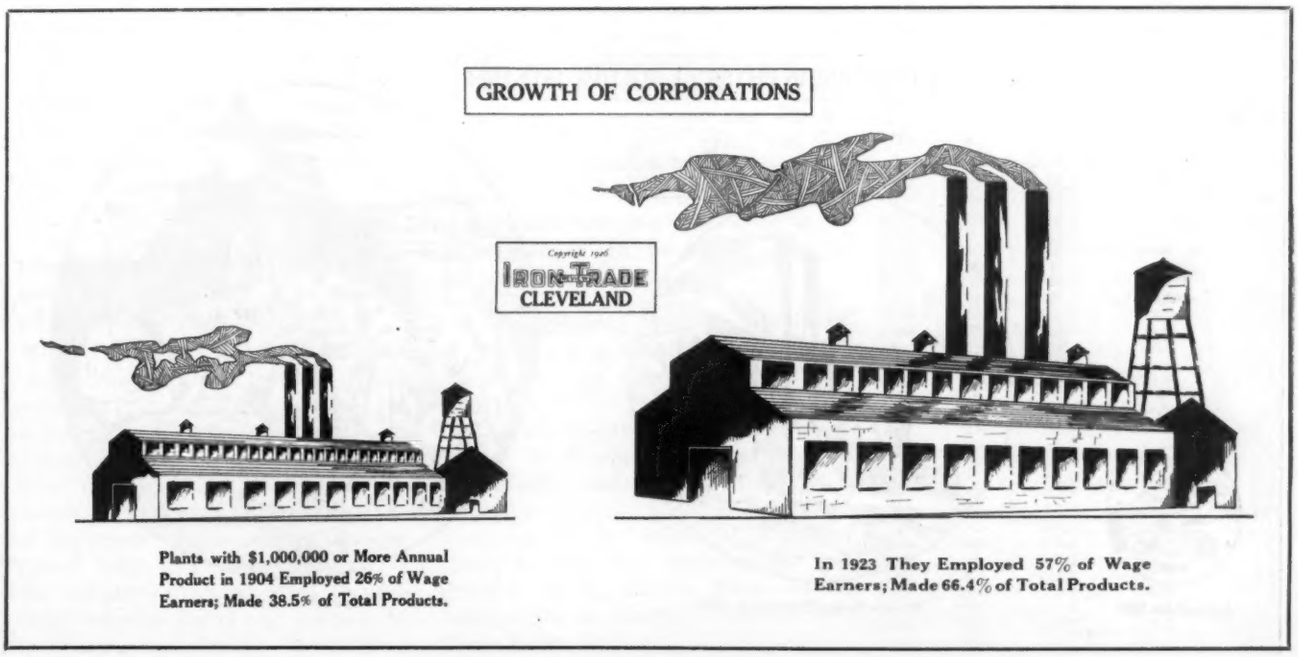
A similar view of the development of large-scale production is afforded by an examination of establishments according to their size. In 1923 only 1.4 per cent of the total number of manufacturing establishments employed more than 500 persons each, but this 1.4 per cent of the total establishments employed 38.1 per cent of the total number of wage earners. If to this be added the number of plants employing from 251 to 500 wage earners each, we find that in the class of factories employing more than 251 workers are comprised 3.4 per cent of the total number of establishments, but 53.3 per cent of the total number of wage earners.

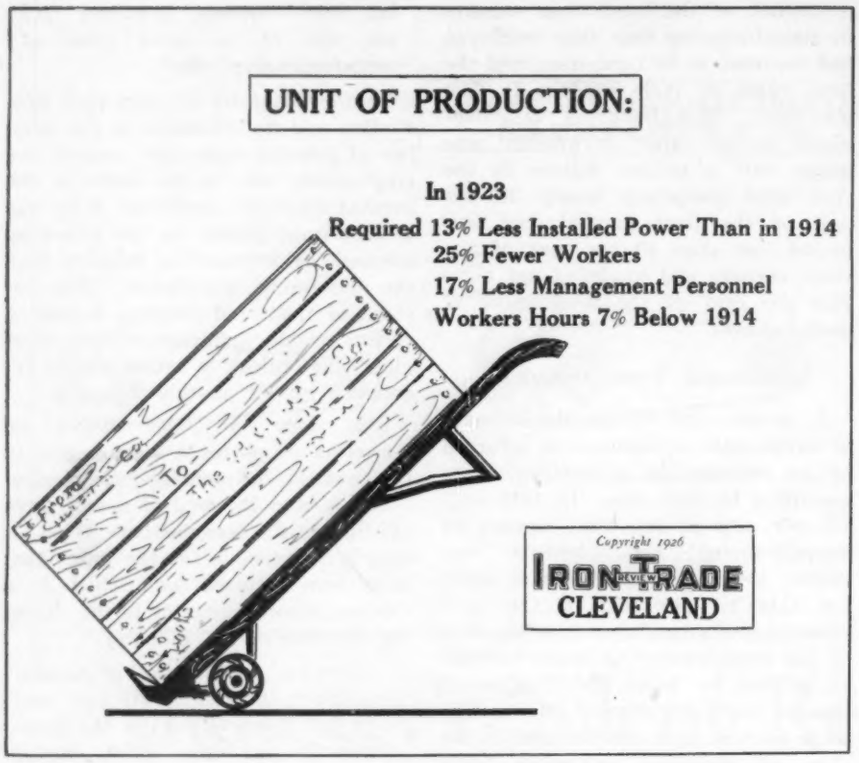
Closely intertwined with the growth of large-scale production, and no doubt a contributory factor in its development, is the increase in the influence of corporately owned establishments. In 1904, 23.6 per cent of the manufacturing establishments in the United States were corporately owned, and in 1919 the percentage was 31.5. But this 31.5 per cent of the manufacturing establishments, produced 86.5 per cent of the total value of manufactured product.

This development of large-scale production and its influences in the number of persons dependent upon it for employment and in the share of the product which it contributes, is no less a significant factor in the changing economic environment of industry than the increasing population. But instead of the trend pointing toward a decline in the influence of the large plant, the outlook is rather for an increasing growth in this direction.

Size alone no longer strikes the American people as a menace and in the development of large-scale production has been the seed of a new force of industrial organization which is largely responsible for the gains that have been attained, and which is a further important factor in the changing environment of industry.

If we look at the trend of population since the end of the last century and compare with it the three productive activities which employ the major part of our gainfully occupied population, we find that agriculture has not held its own with population growth. While the physical volume of agriculture has risen 39 per cent between 1919 and 1924, the physical volume of manufacturing production has risen 162 per cent and of mining production 222 per cent. In few periods of the history of mankind has man had so much to eat, so easily and cheaply obtained, as now. Agriculture's trend of development since 1919 has been downward, and its whole tendency since the beginning of


GROWTH OF CORPORATIONS
Copyright 1926
IRON TRADE
CLEVELAND
Plants with $1,000,000 or More Annual Product in 1904 Employed 26% of Wage Earners; Made 38.5% of Total Products.
In 1923 They Employed 57% of Wage Earners; Made 66.4% of Total Products.



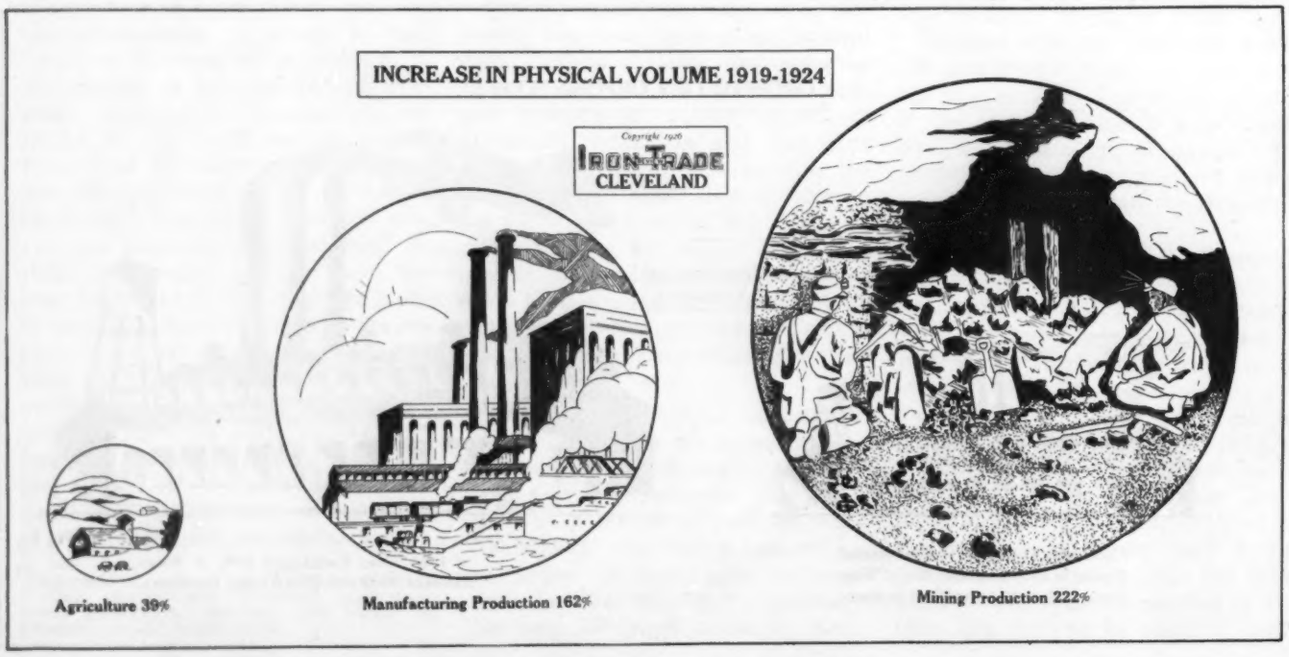
the century has not been in line with other basic production.

The greatly increased manufacturing and mining production is a further evidence of the growing drain or our industries on our natural resources, a situation which in itself calls for wise economic planning. Mining output per capita, measured in dollars of constant 1914 purchasing value, rose from $12.61 in 1899 to $2696 in 1924, per capita manufacturing output from $77.34 to $134.28, whereas per capita agricultural output declined from $69.55 to $64.13. This unequal balance between agricuture and other basic production has created a problem which is well deserving of the attention of industrial executives. Industry cannot for long exist on a prosperous basis with agriculture in the position in which it finds itself. Our agriculture exercises normally a purchasing power of $10,000,000,000 annually for goods and services produced by others; it purchases about one-tenth of the value of manufactured goods produced; it supplies materials upon which depend industries giving employment to over half of our industrial workers; it supplies about one-eighth of the total tonnage of freight carried by out railroads, about one-half of our exports, and pays about one-fifth of the total cost of government.

Then, there is a wholly new force in modern industrial organization. This is the rise of industrial management as a dominant influence in the integration of industrial processes and the efficient operation of industry. The development of industrial management is a separate entity and may be referred to as one of the silent revolutions within modern industry.

This development of management as a new force has brought with it a different attitude of mind and a new spirit. It has emphasized more than ever the responsibility of the employer to employes and the community. It has helped to do away with the deplorable class spirit, all too evident in the industry of the past, and to introduce a human as well as a more scientific attitude into industry.

Our emergence as the leading manufacturing nation has given us a certain place in world economic organization which in turn has affected our environment and reacted upon our industries and people. In the last few years we have been buying goods from other nations to the extent of about $3,755,000,000 a year and in turn have been selling them goods at an average of about $5,035,000,000 a year. An examination of the export trade shows a fairly steady decline in crude materials for manufacturing and of food stuffs, and a corresponding increase in partly and wholly manufactured goods. Our import trade has been characterized, on the other hand,by a steady increase in



crude materials for manufacturing and a corresponding decline in manufactured articles. Thus, our exports of crude materials for manufacturing which averaged well over 60 per cent of all of our exports between 1820 and 1870 have averaged under 30 per cent since 1900, while semimanufactured and other manufactured goods, which between 1820 and 1870 averaged under 15 per cent of the total have since 1900 comprised about one-half of our total exports. Manufactured goods which from 1820 to 1870 constituted over two-thirds of our total imports have since 1900 averaged under 30 per cent, whereas our crude material imports which prior to 1870 averaged under 20 per cent of the total have since 1900 run at the rate of between 35 and 40 per cent of the total.

Due to our fortunate position in natural resources our competitive position is especially strong. No other country is more nearly self-supporting in minerals and in no other country can the mineral raw materials be delivered as a whole more cheaply than in the United States. Yet, while we have within our boundaries 38 per cent of the installed waterpower and produce 83 per cent of the world's automobiles; 38 per cent of its coal; 70 per cent of its petroleum; 54 per cent of its copper; 40 per cent of its lead, 46 per cent of its pig iron; 49 per cent of its steel ingots and castings; 57 per cent of its paper; 53 per cent of its lumber; 55 per cent of its cotton; 25 per cent of its wheat; and 30 per cent of its cereals, other than wheat, we are as a nation dependent upon other nations for certain important raw materials or for products essential in the manufacture of goods in which we excel. This dependence on other countries for certain essential materials in the face of attempts by certain of the foreign nations to control the supply and hence the price of these has resulted in a head-on collision between economics and politics and confronted certain of our industries with a most serious situation.

Not only is the per capita amount of national income higher, but despite our reputation as a wasteful and free-spending people, savings are considerably higher in the United States than in other countries. Indicative of the relative position of the American wage earner in comparison with the wage earners of other countries may be noted the following figures based on studies by the International Labor Organization at Geneva, Switzerland. These studies show that, if we place the purchasing value of wage earners' incomes relative to the cost of food and shelter in Philadelphia, as typical of the United States, at 100, the position of other countries is: Ottawa, Can. 83; Sydney, Australia 77; Copenhagen, Denmark 72; Oslo, Norway 58; London, England 56; Amsterdam, Holland 49; Stockholm, Sweden 49; Berlin, Germany 40; Prague, Czechoslovakia 33; Brussels, Belgium 33; Vienna, Austria 29; Milan, Italy 28; Warsaw, Poland 26; Tallinn, Esthonia 24. Thus at the beginning of 1926, the American wage earner was, with the exception of the wage earner in Denmark, from 40 to over 75 per cent better off than the average European wage earner. Whereas the orthodox economists have held that the danger to the standard of living of any people came from low-paid workers, American industrial organization has shown that high wages coupled with high productivity and efficient factory organization may result in production of goods at prices capable of meeting the competition of pauper labor. Realization of this fact is bringing European managers to the United States in large numbers to study our methods and organization.

Units Near Completion

Contracts for the bringing in all coal to the Weirton Steel Co.'s docks following their completion early next August have been awarded to the Hillman Transportation Co., Pittsburgh. The brick work on the stoves of the new blast furnace, one of the features of the $15,000,000 expansion program, is going forward and the stack probably be ready for operation in September. In July some of the new open-hearth furnaces will be finished and in October the coke ovens are to be in readiness for action. The new strip mill, will not be completed for at least a year but ground work is going forward in a satisfactory manner. It is inquiring for 11 cranes of 10 to 40-ton capacity for this project.

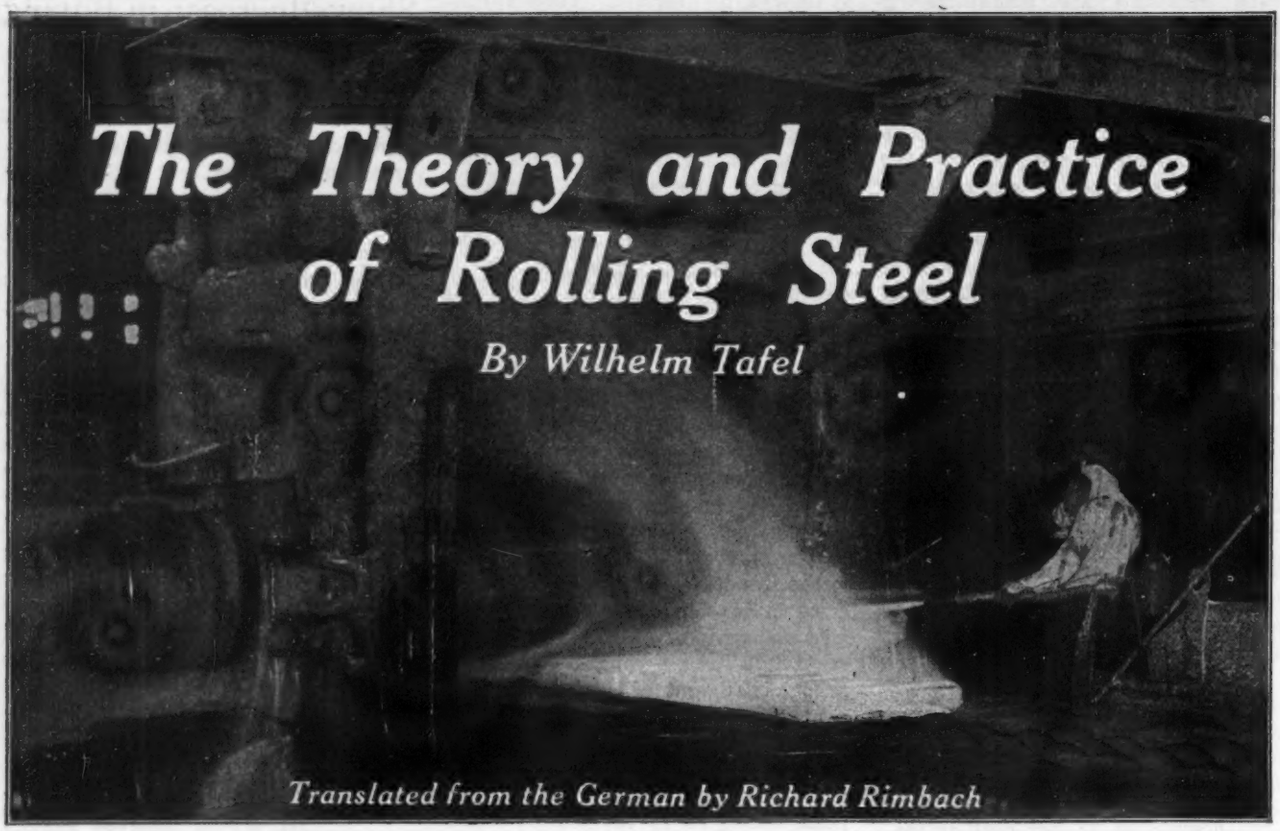
The purchasing Agents Association of Indiana has elected the following officers for the coming year: President, Frank C. Thompson, Link-Belt Co., Indianapolis; vice president, Walter W. Ward, L. S. Ayers & Co., Indianapolis; secretary, R. E. Kennedy, Esterline-Angus Co., Indianapolis; treasurer, S. M. Raymond, Diamond Chain & Mfg. Co., Indianapolis; and director, D. F. Roach, Terre Haute, Indianapolis & Eastern Traction Co., Terre Haute, Ind.

Shows Increase in Buying Power of Earnings

Purchasing power of hourly earnings of blast furnace workers, except common labor, showed an increase of 48.8 per cent in 1924 over 1913, according to a report from the bureau of labor statistics. The gain for employes at bessemer converters in the same period was 33 per cent and among bar mill workers 21.3 per cent.

The earnings of common labor in the iron and steel industry as a whole in 1924 had a purchasing power 34.7 per cent greater than in 1913. The bureau has worked out the following table showing the index numbers of hourly earnings, index numbers of the cost of living, and the purchasing power of hourly earnings. The index numbers of the cost of living prior to 1913 are based solely on retail food prices, as data on the other items entering the family budget were not compiled prior to that year.

	Index numbers of hourly earnings	Index numbers of cost of living	Purchasing power of hourly earnings: Index numbers measured in living cost	Purchasing power of hourly earnings: Per cent of change compared with 1913
BLAST FURNACES				
1907	88	82.0	107.3	+ 7.3
1908	85	84.3	100.8	+ 0.8
1909	83	88.7	93.6	— 6.4
1910	87	93.0	93.5	— 6.5
1911	89	92.0	96.7	— 3.3
1912	92	97.6	94.3	— 5.7
1913	100	100.0	100.0	.....
1914	101	103.0	98.1	— 1.9
1915	101	105.1	96.1	— 3.9
1917	156	142.4	109.6	+ 9.6
1919	250	188.3	132.8	+32.8
1920	283	208.5	135.7	+35.7
1922	191	167.3	114.2	+14.2
1924	254	170.7	148.8	+48.8
BESSEMER CONVERTERS				
1907	85	82.0	103.7	+ 3.7
1908	79	84.3	93.7	— 6.3
1909	82	88.7	92.4	— 7.6
1910	86	93.0	92.5	— 7.5
1911	82	92.0	89.1	—10.9
1912	90	97.6	92.2	— 7.8
1913	100	100.0	100.0	.....
1914	90	103.0	87.4	—12.6
1915	94	105.1	89.4	—10.6
1917	151	142.4	106.0	+ 6.0
1919	208	188.3	110.5	+10.5
1920	241	208.5	115.6	+15.6
1922	170	167.3	101.6	+ 1.6
1924	227	170.7	133.0	+33.0
BAR MILLS				
1907	94	82.0	114.6	+14.6
1908	84	84.3	99.6	— 0.4
1909	86	88.7	97.0	— 3.0
1910	95	93.0	102.2	+ 2.2
1911	90	92.0	97.8	— 2.2
1912	90	97.6	92.2	— 7.8
1913	100	100.0	100.0	.....
1914	96	103.0	93.2	— 6.8
1915	98	105.1	93.2	— 6.8
1919	214	188.3	113.6	+13.6
1920	252	208.5	120.9	+20.0
1922	173	167.3	103.4	+ 3.4
1924	207	170.7	121.3	+21.3
COMMON LABOR				
1907	83	82.0	101.2	+ 1.2
1908	81	84.3	96.1	— 3.9
1909	80	88.7	90.2	— 9.8
1910	87	93.0	93.5	— 6.5
1911	88	92.0	95.7	— 4.3
1912	89	97.6	91.2	— 8.8
1913	100	100.0	100.0	.....
1914	100	103.0	97.1	— 2.9
1915	99	105.1	94.2	— 5.8
1917	164	142.4	115.2	+15.2
1919	254	188.3	134.9	+34.9
1920	280	208.5	134.3	+34.3
1922	185	167.3	110.6	+10.6
1924	230	170.7	134.7	+34.7



The Theory and Practice of Rolling Steel

By Wilhelm Tafel

Translated from the German by Richard Rimbach

Chapter V—Continued

A METHOD sometimes used with profiles having a flange on one side is the so-called counter-flanges in the shaping passes. A part of the flange is placed on the other side of the pass as shown in Fig. 139 so that the grooves in the rolls on the actual flange side are not so deep. Experience shows that in pressing away the lumps thus made in the last or next to the last pass the material goes into the flanges easily.

In Table X are various dimensions for and in Fig. 139 details of the pass design for a 4.724-inch channel. The procedure, from which it originated, is the same as with the I-beam example and as with all shape pass designs, namely that for the thinnest cross-section, the web, the draft stage or the relative draft is determined and from this the spread and elongation is calculated. From the principle of equal elongation the cross-section of the flange in every pass is had. The maximum indirect draft at the point and at the bottom which is desired in the flanges then is calculated to arrive at the desired cross-section, and this is divided between the flange and counterflange.

When the pass shape, which is assumed to be filled by the rectangular ingot, is determined it is desirable to investigate if this shape will be filled by a rectangular cross-section. If that is not the case then another roughing pass should be added. The roll designer must bear in mind, that a pass design is much better, the fewer the passes in which a clean and exact dimensioned final product can be obtained. If the investigation of the number of passes chosen discloses that the first pass does not fill he should not hesitate to work over again the whole design with heavier drafts. Frequently headway can be made by deviating from the regular pass design. The method previously suggested for calculating the filling can be used in this case.

Tracing Is Recommended

Tracing and placing the passes over one another offers a necessary control and supplement of the calculation. As previously mentioned, it is impractical to draw all passes one on top of the other. This was done in the design shown in Fig. 139 to save space, and only for some passes, so that the clearness will not be lost, as to which pass the different lines belong.

The finishing pass, No. 1, is turned with the flanges in the lower roll; passes Nos. 2, 3 and 4 have the flanges in the upper; pass No. 5 again is turned; passes Nos. 6, 7 and 8 lie as passes Nos. 2, 3 and 4. The advantage of turning over the finishing pass is that the flange height can be held exactly to size. If the flanges lie above and as a mathematically exact filling never can be accomplished there originates an underfill due to low flanges, or an overfill due to flanges which are too high. The disadvantage of the turned over finishing pass is that either the flanges are wedged in easily in the finishing pass or if as in Fig. 139 sufficient play is permitted, they do not become mathematically straight.

Frequently the next to the last pass is turned up, to assure the proper flange height and to avoid the recently mentioned disadvantage in the finished pass.

Columns Nos. 9 and 19 in Table X show about the same elongations except the turned-up passes, with which the flanges remain somewhat behind the web to prevent wedging-in. with the tee pass design.

The pulling along is disregarded, as with the tee pass design. As previously shown it would require a greater pressure on the flanges than on the bottom. Instead, as can be seen from Table X and the design in Fig. 139, the opposite process is used to prevent the formation of the

Table X
Design of a 4.724" x 16.75 lbs. Channel

No. of the Pass	Position of Pass in Relation to Flange	WEB							FLANGE									
		d Thickness in.	D Draft %	D Draft in.	b Spread in.	B Width Inches	Q Cross-Section Sq. in.	n Elongation	d_1 Thickness Top in.	Thickness Bottom in.	Thickness Center in.	D_1 Indirect Draft Top in.	D_1 Indirect Draft Bottom in.	H Height Flange in.	Height Counter Flange in.	Height Total in.	Q_1 Cross-Section Sq. In.	n Elongation	R Inches	r Inches
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
I	Below	0.276	—	—	—	4.793	1.319	—	0.276	0.433	0.354	—	—	1.919	—	1.919	0.680	—	0.354	0.177
II	Above	0.305	10	0.030	0.030	4.764	1.455	1.1	0.266	0.423	0.344	—	—	2.028	—	2.028	0.698	1.03	0.551	0.197
III	"	0.384	20	0.079	0.039	4.724	1.814	1.25	0.325	0.541	0.433	0.059	0.118	1.988	0.059	2.047	0.887	1.27	0.709	0.236
IV	"	0.512	25	0.128	0.049	4.675	2.390	1.32	0.374	0.689	0.532	0.049	0.148	2.087	0.079	2.165	1.155	1.30	0.984	0.276
V	Below	0.728	30	0.217	0.079	4.596	3.348	1.4	0.413	1.004	0.709	0.039	0.315	2.106	0.157	2.264	1.621	1.40	1.181	0.354 0.197
VI	Above	1.033	30	0.305	0.098	4.518	4.650	1.39	0.354	1.043	0.699	—	0.039	2.460	0.394	2.854	2.000	1.25	1.654	0.354
VII	"	1.595	35	0.561	0.167	4.331	6.913	1.48	0.472	1.535	1.004	0.118	0.492	2.165	0.787	2.953	2.961	1.48	1.102	0.394
VIII	"	2.598	Irregular		0.197	4.133	—	—	0.866	1.831	—	Irregular		1.535	0.866	2.402	—	—	.591	0.787
Ingot					5.512 x 3.937															

fins. The flanges have different lengths of points and bottom, which results in a holding back and shrinkage of the bottom similar to the holding back of the vertical part of the tee profiles. With sufficiently large roll diameters it is permissible. With small diameter rolls the pulling along helps by pulling away material from the outer fibers and prevents the formation of fins at the points. The difference in draft between the point and the base of the flanges can therefore be smaller. If the same difference in draft as in Fig. 139 were to be retained the pulling along in combination with the pulling back, would cause the flanges to be empty or cracked.

The same condition applies as was mentioned in regard to fillets. It is better to take the lateral pressure in the flanges too small than too large. To increase it by taking out material on a lathe is unimportant whereas a diminution can only be accomplished by turning a considerable amount from the rolls. Unequal draft causes strains in the flanges. Since the material flows easily from the more strongly pressed parts into the more slightly pressed parts of the flange and can effect an equalization the strain is less dangerous than if different parts of a profile, inclined to each other, are given different drafts. Many roll designers in considering draft pay no attention to the pulling along, or in other words, the inequality of the working diameter.

Passes Nos. 7 and 8 shown in Fig. 139 are irregular. A determination of the elongation of the individual parts of the profile from the profile into the parts would not be dependable, because the boundaries of the profile cannot be determined exactly. To ascertain the filling of pass No. 7, involves the use of the method of average elongation, and an investigation of whether an ingot of approximately the width of the pass and somewhat higher fills the first pass. Eleven ordinates are drawn on the left side of the pass as shown in Fig. 139. Ordinates Nos. 1 to 10 are considered a second time on the right side. The ingot height is to be reduced by the line m o. The point, m, which lies in a corresponding position on the right side but different from the example as depicted by Fig. 125, also lies outside the ingot. To determine the single lengths the ingot height, H, at each point is divided by the pass height, h. At ordinate No. 11 for instance H = 5.512 inches, $h = ab$ = 2.717 inches. At ordinate No. 6, $H = ce$ = 5.276 inches, $h = cd$ = 4.193 inches. H/h is in the first case 2.03, in the latter 1.26.

Ordinate	H	h	H/h
1 & 21	5.059	4.724*	1.07
2 & 20	5.118—	4.980	1.03
3 & 19	5.157—	4.961—	1.04
4 & 18	5.197—	4.843—	1.07
5 & 17	5.236—	4.567—	1.15
6 & 16	5.276—	4.193	1.26
7 & 15	5.335	3.780—	1.41
8 & 14	5.374	3.346—	1.61
9 & 13	5.433—	2.992—	1.62
10 & 12	5.472	2.953	1.97
11	5.512	2.717	2.03

*Ordinates 1 and 21 are smaller than ordinates 2 and 20 because of the fillet in the lower corners of the pass.

In the foregoing table for all ordi-

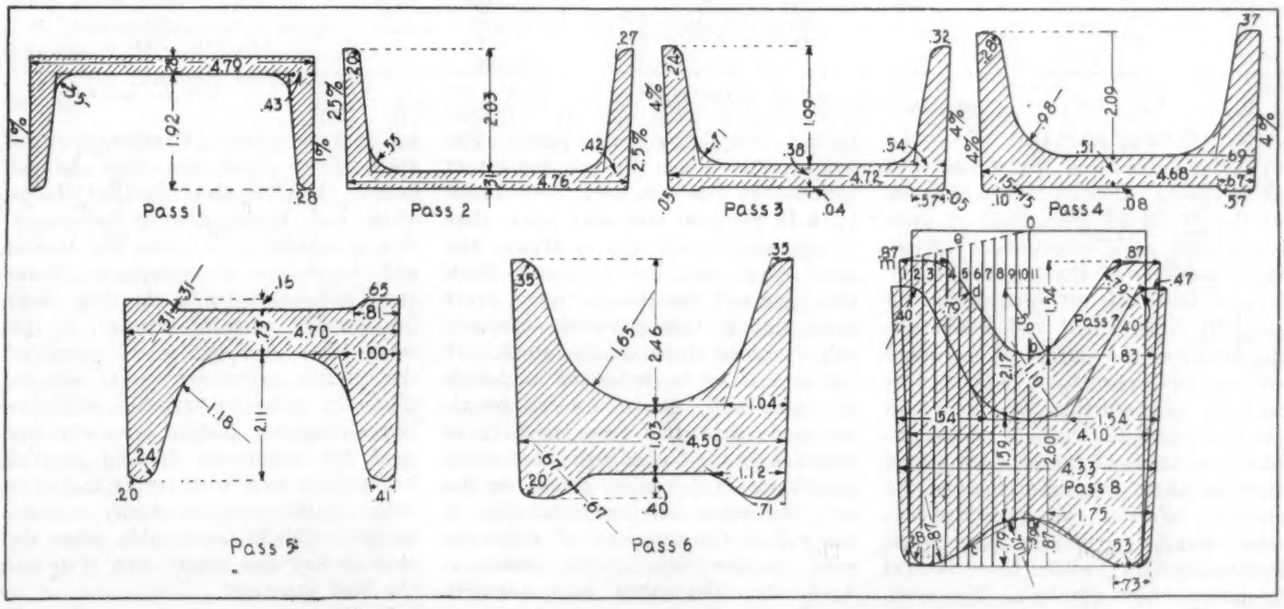


FIG. 139.—DETAILS OF THE PASS DESIGN OF A 4.724-INCH CHANNEL

nates H, h and $H \div h$ is given and the average length calculated in the foregoing manner. It is given as (2 $\times$ the sum of all H/h of ordinates from 1 to 10) + (H/h of ordinate 11) $\div$ 21. Therefore, (2 $\times$ 13.4 + 32.03) $\div$ 21 = 1.37. According to this the average height to which the ingot can rise after the pass is H_m = 5.512 $\div$ 1.37 = 4.024 inches. On the other hand, the average pass height is (2 $\times$ the sum of all h from 1 to 10) + (h_{11}) $\div$ 21. Therefore, (2 $\times$ 41.161 + 2.717) $\div$ 21 = 4.047 inches. The filling, therefore, is complete at about 4.047 — 4.024 or 0.023-inch.

That practice does not agree with the foregoing calculation to 0.004-inch but there will be deviations of some thousandths as a consequence of unround corners of the ingot entered, of the knurling, of pulling along especially with small roll diameters, and, finally of the spread. The spread is considered approximately insofar as the lines of reduction, *mo*, have not been drawn to the corners of the ingot but to those of the broader profile after the pass. The calculation of the retarding effect of the spreading material, therefore, enters somewhat into consideration with the natural elongation which equals 1. The missing 0.023-inch refers to the average height of the profile. If the points of the flanges occupy only one-fifth part of the entire width, the missing part of the height, that is, the part which remains unfilled, amounts to 0.118-inch. The rule of the average elongation only applies if the parts of the profile, which are subjected to different drafts, are approximately equal.

With profiles having flanges on both sides as the I-beam, it is only possible to work with direct draft on one side. Therefore, if the flange is to be developed uniformly, it must be turned over after each pass. The flange side, which in one pass was bounded by one roll, must be bounded by both rolls in the next pass; that is why the 3-high mill is always the most convenient for I-beams. With this type mill the change in the draft from side to side proceeds automatically without turning the stock. If beams are to be rolled on a 2-high reversing mill, the collars can be alternated each time from positive to negative and, to avoid using too much space, one type can be placed on the left, the other on the right side of the rolls. Or two sets of rolls one with positive collars with passes 1, 3, 5, etc., the other with negative with passes 2, 4, 6, etc., can be used to carry the stock to the other roll after each pass. This arrangement is more convenient than to turn over after each pass, because a lateral movement must take place anyway when changing passes.

The profile of a beam merely is a double tee, the only difference is that its web cannot be entered flat and edgewise, but only flat. Its advantage over the simple tee is that the lateral forces to the right and left neutralize each other, and therefore, a much heavier indirect draft in the first passes, in which the steel is still hot can be used. Furthermore the stock flows into the two flanges easier, than in the one-sided flange of the tee. Retardation of the elongation is employed to lessen the spread and the danger of wedging-in. Moreover, the design up to the first shaping grooves remains regular, as always after two passes all parts of the profile experience equal elongation. In order to save the rolls the same roughing passes generally are used for numerous finished profiles by working first with larger and then with smaller and eventually without spread. This is permissible, when the steel is hot and plastic but it is not the best practice.

In Fig. 140 is reproduced the pass

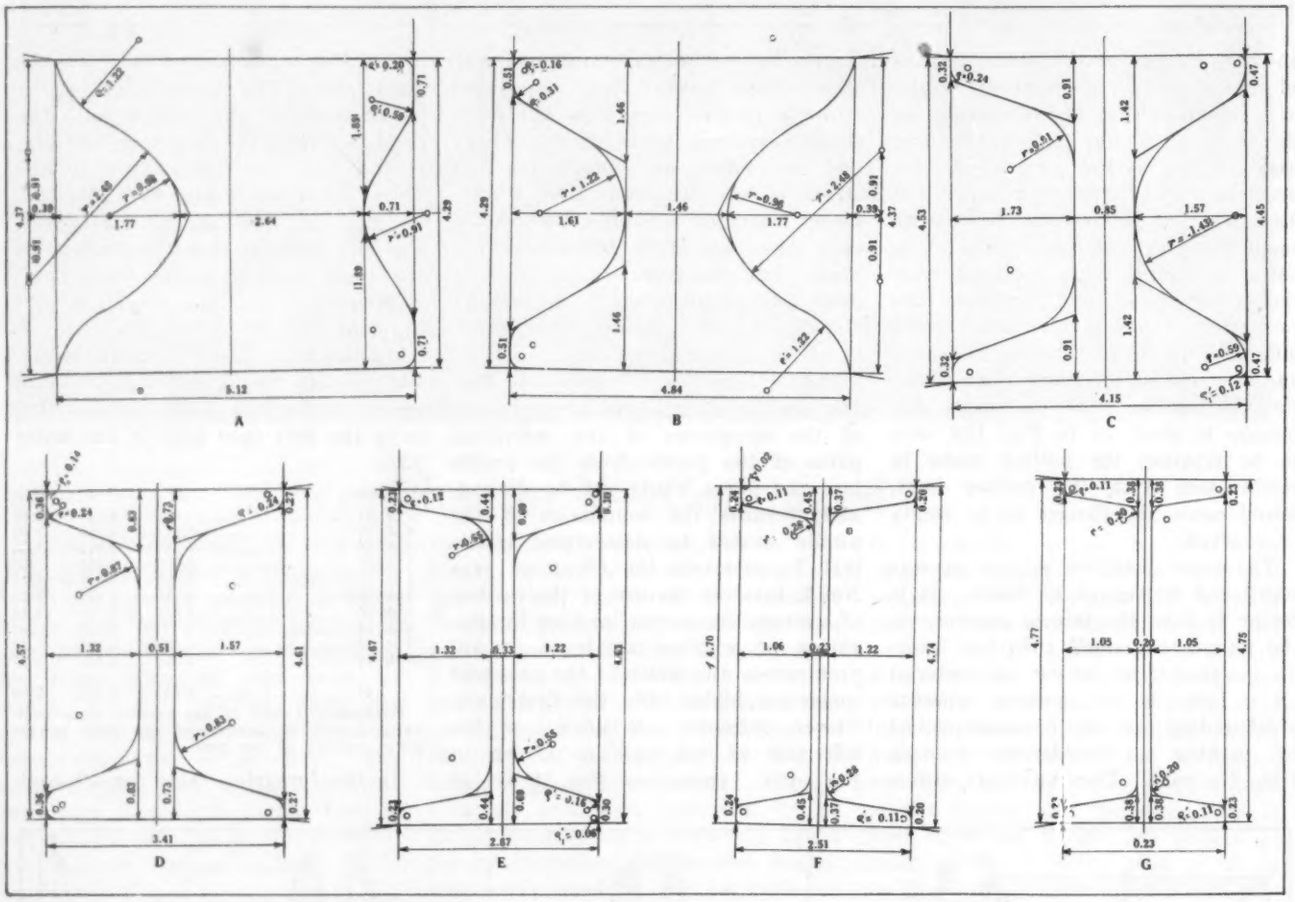


FIG. 140.—DETAILS OF THE PASS DESIGN OF A 4.724-INCH I-BEAM

design of a 4.724 x 2.283 x 1.673-inch I-beam. The division into single rectangular cross-sections has been performed here so that the web is considered as extending the whole length which differs from the tee design. Assume the design must be placed on a single 3-high mill having a roll length of only 62.992 inches. A preliminary calculation of the number of necessary passes shows that at least one dead hole must be used. This presents no difficulty, if the stock is turned 180 degrees between the lower pass designated No. 1 in Fig. 141 and the upper pass designated No. 2. In that case shaping on the side of the pass designated *abc*, is avoided. It merely touches the outline, *a' b' c'* in pass No. 2. As it belongs to the middle roll, it must be the same as *abc*. Draft and forming work between passes 1 and 2 are produced solely by different outlines on the other side of the pass namely *def* and *ghi* respectively.

Tilting Is Inconvenient

The tilting necessary in this case is inconvenient especially where good tilting devices are not available as is the case with traveling roll tables. The disadvantage is that the tilted ingot no longer lies exactly in front of the particular pass and, therefore, must first be adjusted by means of the table or the manipulator. To promote rapid and unhindered working the design must be prepared so that during the whole rolling process tilting is not necessary. This is only possible, if from pass No. 1 to 2 the flange sides are interchanged by placing that previously lying in *abc*, on the side *ghi* and *def* in *a' b' c'*. Such a dependence of the pass design on equal pass sides such as *abc* and *a' b' c'* requires more thoroughness on the part of the roll designer, than with the simple relations assumed for the channel.

Thirdly, the design considered in this case differs from the channel design in having larger flange drafts. If smaller indirect draft were used as with the channel, the flanges would have to receive correspondingly more direct draft to get the same elongation as the web. As the flange heights of the I-beam in the finishing pass are already higher or 2.283 inches against 2.087 inches, it would necessitate too high a starting profile or ingot. Where the part of the pass in question is surrounded by different rolls, these large indirect drafts are easily overcome. However, they lead to a more rapid wear, which has to be considered. To keep the increase in pass height low from the final pass toward the first, the following means is employed:

1. Direct draft is conserved in the pass bounded by the same roll if the elongation, compared with that of the web, is held back.

2. The direct draft in the part of the pass lying between different rolls is eliminated entirely. Since an elongation equivalent to that of the web first had to be produced on this side and then an additional amount to compensate for that which was not given enough under 1, heavy lateral drafts result. They require large fillets. If chosen too large they are reduced easily but they cannot be increased if they are chosen too small. Fillet radii equal to the absolute in-

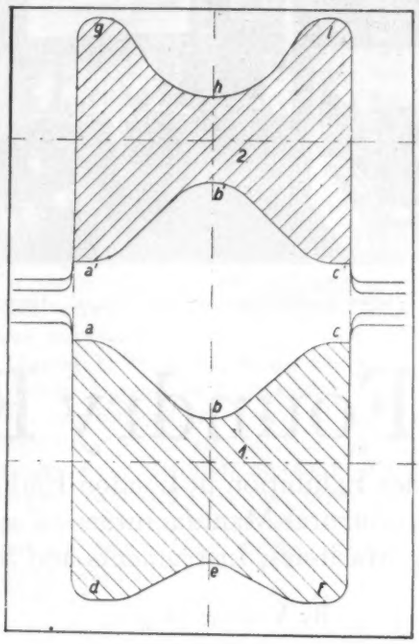


FIG. 141.—DEAD PASS CONTOUR

direct draft under normal conditions will suffice for the desired reserve.

Study Bolt Standards

Standards for bolts and nuts was the subject of a special meeting, recently, at the third International Standardization conference held at New York under auspices of the American Engineering Standards committee. At this meeting a step was made toward the adoption of an international standard for bolts and nuts. The conference formally requested the British Engineering Standards association to continue experiments which thus far have indicated that much smaller nuts and bolt heads would give satisfactory results at less cost. The result of this investigation will be circulated to all of the 20 national bodies for consideration in connection with proposals which have been advanced by the Swiss and the Americans as a basis for international standardization.

Foundrymen Arrange for Apprentice Contest

To encourage apprentices and to direct attention to apprentice training work, the American Foundrymen's association will conduct a contest in molding at its convention at Detroit, Sept. 27-Oct. 4. At the Milwaukee convention in 1924 such a contest was arranged for apprentices in Milwaukee, but this year plans have been made on a national scale. The apprenticeship committee has selected patterns to be made in competition in both the steel and gray iron divisions. Blueprints of these castings are available and indicate the manner in which the patterns are to be made.

Local contests will be sponsored by branches of the association or other recognized organizations of foundrymen or manufacturers. The best castings from each local contest will be forwarded to the convention where a board of judges will select the most perfect in each division. Each casting will be marked with a number instead of the name of the contestant and the time required to finish the mold also will be indicated for the information of the judges. Information regarding the contest with complete regulations and blueprints of castings may be secured from C. E. Hoyt, secretary of the American Foundrymen's association, 140 South Dearborn street, Chicago.

Veteran Employes Enjoy Annual Dinner

The Veterans' association of the Farrel Foundry & Machine Co., Ansonia, Conn., one of the largest machinery manufacturing plants in the world, recently held its annual dinner. Ninety attended. Charles F. Bliss, president of the company made an address in which he said that if the business world is to be carried on steadily there must be world peace. Rev. Franklin J. Kennedy, of the Methodist church of New Haven, was the principal speaker of the evening, his address being entitled "Stability and Character."

Among the officials of the company present were: Franklin Farrel, Jr., first vice president; George C. Bryant, secretary; Carl Hitchcock, assistant secretary, and Frederick M. Drew, Jr., assistant treasurer. The Veterans' association is composed of 121 employes who have been with the company 25 years or more. Only 31 of these are pensioners. The average length of service of the members is 33 years.

International Foundry Trades Exhibition at the Royal Agricultural Hall, London

Show New Foundry Equipment

International Foundry Trades Exhibition in London Embraces Representative Products of British and Continental Manufacturers—Cupolas, Sand Handling Apparatus, Molding Machines, Instruments and Supplies Exhibited

By Vincent Delport

GREETING Sir Robert Hadfield, chairman of Hadfields, Ltd., of Sheffield, who formally opened the International Foundry Trades Exhibition in London on June 10, V. C. Faulkner, chairman of the Foundry Trades' Equipment and Supplies Association, Ltd., stated that the foundry industry is one of the principal key industries of the country and, as such, deserves due consideration. Sir Robert, reflecting on the difficulties of the moment, said that the organization of so great an exhibition at such times is a wonderful achievement. He said that the Foundry Trades' Equipment and Supplies Association, Ltd., which promoted the exhibition, F. W. Bridges & Sons, Ltd., the organizers, and the exhibitors were to be congratulated. At the luncheon which followed the opening ceremony and which was given by Messrs. Bridges, the guests of honor were Sir Robert Hadfield and Sir William Larke, director of the National Federation of Iron and Steel Manufacturers.

The coal stoppage continuing after the general strike one month ago prevented a number of firms from taking part in the show, but the 60 odd exhibits which were displayed were fully representative of the industry.

British Show Is Success Despite Coal Strike

AN IMPORTANT feature of the show was the display of melting plants. The Pneulec Machine Co. Ltd., Smethwick, Birmingham, showed a plant consisting of a bottom section of a standard windbelt type cupola, and two geared crane ladles. A sectional model of the company's special spark arrester also was shown. The firm also displayed its electrically operated jolt molding machine.

The Constructional Engineering Co. Ltd., of Titan Works, Birmingham, exhibited a plant composed of a complete melting unit. Improvements are embodied in the cupola, particularly in connection with the independent control of the area of each tuyere and the arrangement of separate inspection and poking holes which permit of an uninterrupted view of the interior molding zone when poking.

Sydney Evans of Cannon Street, London, exclusive agent for Messrs. Ketin & Thiriart of Liege, Belgium, exhibited a sand preparing plant which combines a sifter, a mill and a disintegrater. Sydney Evans also displayed samples of silica sand.

The International Foundry Equipment Co., Birmingham, showed castings of various kinds with technical data relating to high duty cast iron as produced under the Emmel Thyssen process. Bagshawe & Co. Ltd., Dunstable, displayed working models of conveying equipment.

The molding machine section afforded the visitors an opportunity of investigating the latest improvements achieved in Great Britain and France.

The Britannia Foundry Co. Ltd., Coventry, displayed turnover jolt molding machines and hand molding machine, adjustable hand ram molding machine, a core oven with trolley and a foundry sand mixer.

John Macdonald & Son, Ltd., Glasgow, had an exhibit consisting of a pneumatic jolt and pattern drawing or stripping plate molding machine of new design. The machine will accommodate eight different sizes of flasks. A pneumatic jolt turnover and pattern drawing machine with table 24 inches square and of 6 hundredweight lifting capacity also was shown.

The Universal System of Machine Moulding & Machinery Co. Ltd., Queen Victoria street, London, is a subsidiary firm of Bonvillain & Ronceray, Choisy-le-Roi, near Paris, France. It showed a full range of hydraulic molding machines and sand plant featuring several improvements. The outstanding exhibit was a standard molding machine with the down or bottom sand-frame. The ramming is done from the bottom. Other displays were, a portable sand disintegrater, core sand mixers, samples of core oil, pattern plates, stripping plates, core-boxes, and a new type of pulley block.

J. B. Corrie & Co. Ltd., London, sole agents for the firm of Alfred Baillot & Co., Paris, France. They exhibited four types of hydraulic molding machines in which the ram is located underneath the table and is operated by hydraulic distributing valves with a 3-way control. A semiautomatic sand plant also was shown, being a one-pan mill with a capacity of about 4 tons per hour. The Denbigh Engineering Co. Ltd., Tipton, Staffordshire, displayed several machines, the larger types being of both straight-draw and turnover types.

Show Sand Handling Equipment

An important section of the exhibition consisted of sand blast plants and sand preparing machines. Establishments A. Sisson-Lehmann, Charleville, France, brought over a complete sand blast apparatus. This machine is a modification of their previous heavy type, for use in medium size foundries. The company also showed a new molding machine for light work that can be operated by women.

The Rapid Magnetting Machine Co. Ltd., Birmingham, displayed a sand separator used for automatically extracting the iron content from used sand.

L'Outillage de Fonderie of Paris, France, exhibited a sand mill with differential runners. The base and the rotating pan are in hard cast iron and the pan has a false bottom. The company also showed an electrically driven ladle, a hand molding machine on which both the cope and the drag can be rammed, a portable drying oven utilizing coke dust, and ladles of a capacity ranging from ½-ton to 1 ton.

The Fordath Engineering Co. Ltd., West Bromwich, exhibited a new type of mixing machine which has a revolving pan which is mounted on ball bearings and is so constructed that the sand when mixed is automatically discharged at a certain point while the pan is revolving, the discharge being effected by means of four sliding doors operated by a cam.

The British Drying & Heating Co. Ltd. of London, had an exhibit which comprised heating elements in both portable and permanent built-in-forms. Two heaters manufactured by this company recently arrived in America and are being tried out by the United States Steel Corp. A portable machine for the preparation of used and new sand, which is electrically driven, also was displayed.

James Keith & Blackman Co. Ltd., London, showed dust separator fans for the removal of grit and other impurities from air or flue gases. Broom & Wade, Ltd. of High Wycombe, exhibited various types of air compressors, one of which was a portable petrol-engine driven self-contained machine.

The General Refractories Co. Ltd. of Sheffield, displayed a collection of refractory materials including fire bricks formed of magnesite, chromite, silliminite, silica and fire clay. They also showed samples of sand produced by the Yorkshire Amalgamated Products, Ltd. Silica cement, silica paint, fluorspar flour and various ganisters also were exhibited. Thomas & Bishop, Ltd. of London, showed samples of refractory cements and textile belting. Beecroft & Partners, Ltd., Sheffield, had an exhibit of core oils and cores made with these oils.

The Blackfriars Foundry Requisite Co. Ltd. of London, exhibited various grades of coal dust and blackings made from selected Yorkshire coal by Messrs. J. & J. Dyson, Ltd. of Sheffield, Chesterfield and Stannington.

William Cumming & Co. Ltd., Glasgow, showed a wide range of foundry facings. Thomas E. Gray & Co. Ltd., London, converted its stand into a section of a quarry where its products were displayed.

Sterling Foundry Specialties, Ltd., Bedford, which is associated with the Sterling Wheelbarrow Co., Milwaukee, Wis., showed a wide selection of rolled steel molding flasks of various sizes and styles suitable for iron, brass, steel and aluminum foundries. A variety of portable electric tools was displayed by S. Wolf & Co. Ltd., London. Pneumatic tools, including chipping hammers, core breakers, floor and bench sand rammers, pressure-seated air valves, etc., made by the Cleveland Pneumatic Tool Co., Cleveland, were shown by John Macdonald & Co., Glasgow. H. G. Sommerfield, London, showed a variety of asbestos protective garments, safety goggles, sand blast helmets, welders' masks, etc.

Demonstrate Pyrometers

Various scientific instruments could be seen at the exhibition. Chas. Hearson & Co. Ltd., London, displayed metallurgical microscopes manufactured by C. Reichert in Australia, including a new ore microscope. This firm also showed an electric muffle furnace and an all-metal drying oven. The Foster Instrument Co., Letchworth, Herts., showed pyrometers. Ogilvy & Co., London, exhibited a large metallographic microscope with camera manufactured at Wetzlar, Germany, and low-power oil immersion objectives. This company also displayed its workshop microscope for measuring Brinell impressions, and electric microscope illuminants. F. Davidson & Co., London, exhibited a microscope which can be employed both visually and photographically at magnifications from X25 to X4000. The Bowen Instrument Co., Leeds, showed pyrometers of thermoelectric, electric resistance, radiation and optical types, and rheostats for the control of electric currents. The Monometer Co. (1918) Ltd., exhibited a patented process of pressure die-casting for making axle box bearings and housings for rolling stock, and a die-casting machine for the pressure die-casting of various parts of automobiles, wireless parts, etc.

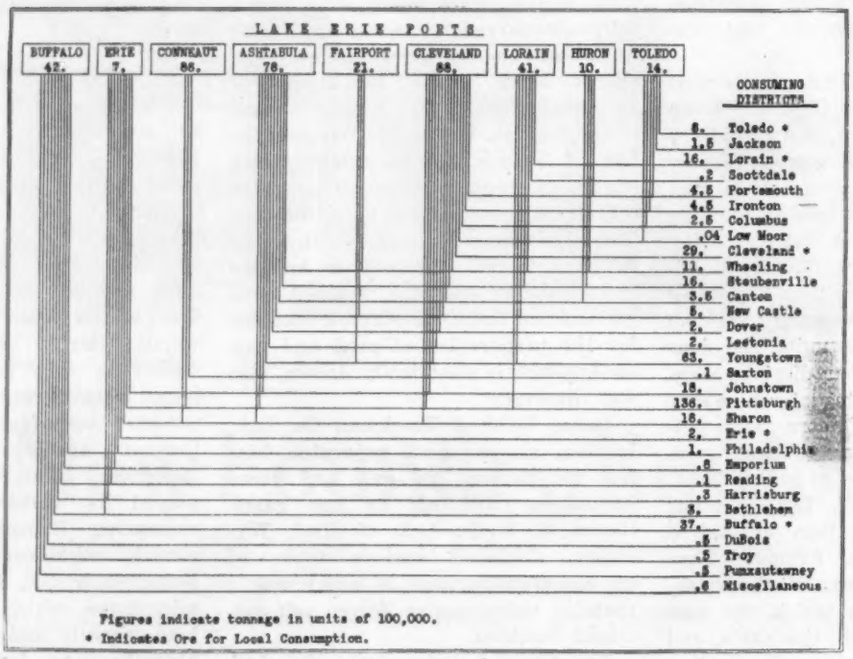
Samples of various brands of pig iron, ferro-alloys, coke, refractories, grinding material, etc. were displayed by Bessler, Waechter & Co., Ltd., London; Consett Iron Co. Ltd., Durham; Lilleshall Co. Ltd., Shifnal, Shropshire; British Pigirons, Ltd., London; and Bradley & Foster Ltd., Darlaston. Lysberg, Ltd., London, showed photographs of the coking plant of North's Navigation Collieries Ltd.

The technical exhibition was of special interest and included several sections. Displays by the National Physical Laboratory organized by Dr. W. Rosenhain, the research department of Woolwich organized by Dr. H. Moore, the British Nonferrous Metal Research association, the Uni-

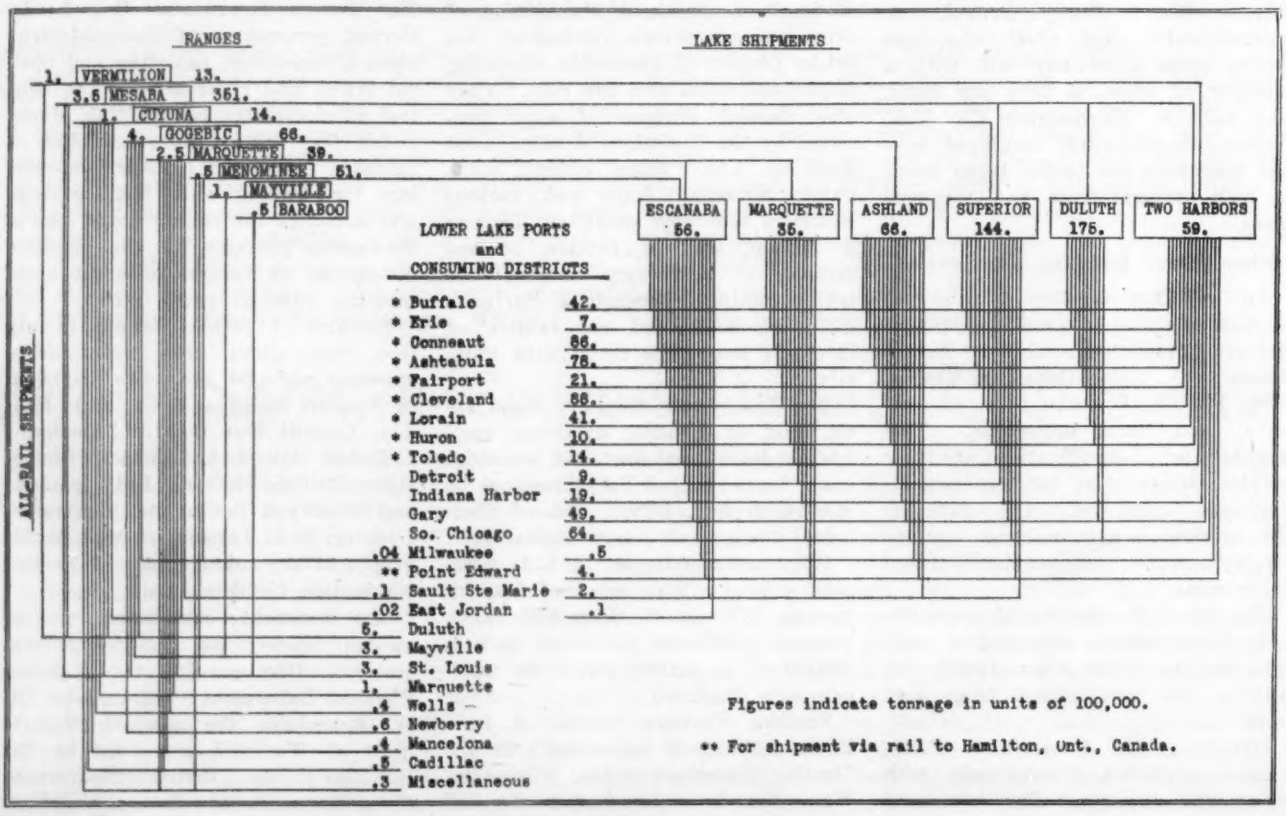
versity of Sheffield organized by Dr. C. H. Desch, University of Birmingham organized by Professor T. Turner, and the British Cast Iron Research association organized by J. G. Pearce attracted attention. A selection of typical castings was shown by R. J. Shaw, and a range of standard and typical qualities of pig iron was exhibited by H. Shillitoe. Dr. Geilenkirchen, secretary of the Verein Deutscher Eisengiessereien, sent to the exhibition part of the technical exhibit which was shown at the Birmingham exhibition in 1925.

Charts Show Distribution of Lake Superior Iron Ore

The lower chart indicates shipments from various ranges, traces them through upper lake ports and to destination at lower lakes. It also shows the all-rail shipments from the ranges.



The upper chart traces the ore from the lower lake ports to furnaces at lake cities and in interior districts. The charts were prepared by the Lake Superior Iron Ore association.



Dynamite Brings Down Blast Furnace in 40-Foot Space

A DIFFICULT job of felling a blast furnace stack in a confined space was accomplished with dynamite recently by the Hudson Valley Coke & Products Corp., Troy, N. Y. The old Burden stack, built originally in 1906 and redesigned in 1912, consisted of a stack and four hot stoves, three small and one 90 feet high. The stack was 80 feet high, and rated at 250 tons a day.

The Hudson Corp. decided to erect a new blast furnace on the exact site of the old; therefore it became necessary to take down the old stack. Plans also called for retaining the power house and other equipment surrounding the stack, and because of this it was necessary to take down the stack piece by piece, or to topple it over in the only open space available between the power house and the stoves.

Clearance of scarcely 40 feet at the ground level was available, and many engineers doubted the advisability of using dynamite in sueh a confined space. The superintendent in charge of the work was sure of his ability to bring it down at the required place.

Placed Dynamite in Columns

The old stack was supported on eight cast iron columns running down below the ground level to concrete supports. The columns were drilled at ground level and filled with clay. Then in each column 12 sticks of dynamite were inserted and clay again was removed from half of the furnace on the side toward the clear space, and then to prevent a "back kick" due to the tendency of the columns to hold to the stack, four additional sticks were packed on top. The bosh brick placed at the top of each column and timed to explode about half a second after the explosion of the dynamite at the ground level. The stack itself was then cut loose from the charging tower and from the ovens, and at 5 o'clock one evening, with a large part of the inhabitants of Troy observing from a safe distance, the dynamite was set off and the stack toppled over exactly as intended. The photograph shows the stack on the way down.

THE OLD BURDEN STACK "TAKING THE COUNT"

Investigates Annealing of Sheet Steel

Stamping and drawing of iron and low-carbon steel sheets into various shapes plays an important part in metal manufacturing operations. Electrolytic iron sheets recently have been advocated as a suitable material for such operations. A preliminary annealing of the sheet before stamping or drawing is necessary as are intermediate annealings between different stages in the drawing in order to remove the "work hardness" and enable the sheet to withstand the deformation of subsequent stages.

As a bearing on this problem a study recently has been made by the bureau of standards on the recrystallization temperature of cold rolled electrolytic iron and open-hearth steel strip. The mechanical properties of the cold rolled materials after annealing at various temperature intervals up to 1290 degrees Fahr. were determined and the microstructural changes studied. The results showed that the electrolytic iron sheet of the composition used was lower in its recrystallization temperature than the open-hearth steel sheet.

A marked recrystallization was noticed in severely cold rolled electrolytic iron sheets after they had been annealed 30 minutes at 930 degrees Fahr. and pronounced softening of the work hardened sheets, whereas a similar change in the open-hearth sheet was not noted until after it had been annealed at 1100 degrees Fahr. for 30 minutes.

Prepare Chart Showing Pattern Marking

A standard color chart 11 x 17 inches showing the various color markings for patterns has been prepared by the American Foundrymen's association. This chart shows the standard pattern markings adopted by the joint committee on pattern equipment standardization. It was prepared by this committee and has been approved by the organization mentioned and by the affiliated groups represented on the joint committee. These are as follows: American Malleable Casting association, American Institute of Mining and Metallurgical Engineers, American Society for Testing Materials, Electric Steel Founders Research Groups, National Association of Pattern Manufacturers, National Association of Purchasing Agents, Foundry Equipment Manufacturers Association, Steel Founders Society of America. Copies can be obtained from the American Foundrymen's association, 140 South Dearborn street, Chicago.

Data on Coking Coals Is Distributed

A paper entitled "The Selection of Coals for the Manufacture of Coke," which was presented at the February meeting of the American Institute of Mining and Metallurgical engineers by Harold J. Rose, assistant chief chemist, the Koppers Co., Pittsburgh, has been reprinted by the company for distribution. The author deals with the behavior of coking coals when heated and discusses a few of the preferred methods of determining the coking properties of coal. Numerous diagrams are included to show the correlation of the chemical composition and the coking properties of coal. The classification of coal by volatile matter content is explained in detail by the author. Incorporated in the text is a table showing the source of coal used in by-product coke ovens and the various chemical and physical characteristics desired in coke. Thirty illustrations are included in the 42-page booklet.

Investigates Properties of Wrought Iron

An investigation recently completed by H. S. Rawdon and Samuel Epstein of the bureau of standards, had for its purpose the study of the effect of phosphorus upon the properties of the finished iron as made by different puddling processes. The phosphorus is contained in both the iron matrix and the slag threads to which the wrought iron owes its characteristic fiber. Only the phosphorus in the iron matrix, however, affects the properties of the metal. Mechanical puddling appears to be more effective in reducing the phosphorus content to a lower figure than is hand puddling. Experiments were carried out on wrought iron made by each of the two methods on a split heat of pig iron, the two parts of the heat being refined by the two processes, hand and mechanical puddling, respectively. The investigation was not extensive enough to warrant any sweeping conclusion concerning all the merits of wrought iron made by the two processes. However, nothing was noted which would show that wrought iron made by hand puddling cannot be equalled by mechanical puddling if properly carried out.

Dye Industry Growing

Preliminary figures compiled by the United States tariff commission show a domestic production of coal-tar dyes for the calendar year 1925 of about 86,000,000 pounds, with a value of about $40,000,000. This is an increase of 25 per cent by quantity over that of 1924. The total sales of dyes in 1925 were about 79,000,000 pounds valued at $36,900,000. This is an increase of nearly 22 per cent in quantity and a 5 per cent increase in total value over the figures for 1924. This increased output and sales is largely due to the greater activity of the domestic textile industry and an improvement in the export trade in indigo and sulphur black.

Features for the year were continued recessions in dye prices, due largely to the severe competition between the domestic manufacturers; conspicuous progress in the manufacture of fast dyes, many valuable dyes of high fastness being produced for the first time in the United States in 1925. The output of vat dyes, other than indigo, exceeded 2,500,000 pounds, compared with 1,820,000 pounds in 1925. This class of dyes is used largely on cotton and yields shades of exceptional fastness. This increase is of special interest as indicative of the pronounced trend toward an increased use of fast dyes. The imports of dyes recorded a 75 per cent increase, by quantity, and 65 per cent increase by value. This increase in imports since the tariff reduction of 15 per cent on September 21, 1924, shows increased competition from foreign dyes, mostly of the higher cost types.

Total dye imports during 1925 were 5,315,158 pounds with an invoice value of $4,791,900. This represents a 75 per cent increase by value over 1924. per cent increase by value over 1921.

Total exports of coal-tar dyes in 1925 was 25,799,889 pounds, valued at $6,694,360. This represents an increase of 64 per cent by quantity and 19 per cent by value over 1924.

Prepare Rivet Standards

Tentative standards for small rivets, 7/16-inch nominal diameter and under tinners, coopers, and belt rivets, recently have been completed by a subcommittee of the sectional committee of the American Society of Mechanical Engineers on the standardization of bolt, nut and rivet proportions. The standard is in tentative form and criticisms are invited. The sectional committee consists of 49 representatives from 20 national organizations.

Editorials

Pig Iron History Repeats Self

FOR three consecutive years large size buying movements of pig iron have developed in the middle of the year. Up to June 22 new orders for approximately 500,000 tons were placed on furnace books, with the price of No. 2 foundry iron at $18 to $18.50. Last year 700,000 tons of pig iron was placed during the buying movement late in May and first two weeks of June. The valley prices of foundry iron were the same as they are today.

In 1924 the buying movement occurred in June, and by the 26th of the month furnace bookings totaled 600,000 tons. Foundry iron in that period was around $19 to $19.50, base, valley. The mid-season buying movement in that year, however, was exceeded in size in December, following the election of President Coolidge. The amount then placed was well over 1,000,000 tons. It was so large that the iron was not absorbed in the first quarter of 1925; consequently there was no pronounced buying movement for the second quarter.

In 1923 there was no buying movement during the early summer; the price was $27 to $27.50. Orders were placed in fairly large volume in August, at which time the price was down to $25, base, valley. In 1922 the market also was quiet during the summer months.

Industry More Efficient

ACCORDING to Magnus W. Alexander of the National Industrial Conference board, American industry has become decidedly more efficient during the past decade. He presents statistics showing that for the same unit of production there were required in 1923 13 per cent less installed power, 25 per cent fewer wage earners and 17 per cent less management personnel than were required in 1914. Improvements in organization and in technical processes and a greater amount of installed power placed behind each wage earner permitted a 33 per cent increase in production per wage earner, while at the same time there was an increase of 19 per cent in the cost of managerial supervision and a 36 per cent increase in the cost of labor.

These figures, together with others of significance appearing in Mr. Alexander's article on page 1622 of this issue, reflect the changes that have been taking place. Specialization, greater concentration of effort, intensive production, standardization, planning, ingenuity, better organization, and many other factors contributed to this increase in efficiency. The records may be considered an endorsement of high-pressure production methods introduced within the past decade.

Finished Steel Consumption Gains

ALTHOUGH it has been known for several months that steel production in 1925 established a new high record, the exact divisions of the expansion were not known officially until this week. These statistics show a total production of ingots and castings of 45,393,524 gross tons, or 332,917 tons above the previous record of 45,060,607 tons in 1917. The gain over 1924 was 19.7 per cent. Ingots increased 19.9 per cent, while castings, failing to establish a new high point, gained 11.7 per cent.

Likewise, the total production of finished rolled products in 1925 reached a new high level with 33,386,960 gross tons. The previous record was 33,277,076 tons in 1923. As compared with 1924, finished output gained 18.87 per cent. The figures emphasize the fact that plates and sheets, structural shapes and merchant bars are the country's principal steel products. In 1924, they constituted 55.7 per cent of the total of finished material; in 1925 they rose to 57 per cent.

Merchant bars in 1925 gained 32.2 per cent and plates and sheets 21.2 per cent. Structural shapes, expanded only 9.75 per cent though the tonnage was the highest in history. Against this concrete bars, keeping up their active growth, forged ahead 24.9 per cent. Two other important finished lines, rails and wire rods, fell below the average gain. Rails increased 14.4 per cent and wire rods 12.7 per cent.

Keep Politics Out of Coal

DISTASTEFUL as is the piling up of bureaucracies in Washington to business and industry of the country, it is becoming realized fairly generally that sooner or later the government must step in and take control of the distribution of bituminous and anthracite coal if tendencies toward the perennial choking off of fuel supplies continue. Many believe that a bituminous strike may come with the expiration of the Jacksonville wage agreement next March.

The problem of the coal fields is becoming more difficult. No hope exists for action by congress

before the session next December. The house committee on interstate and foreign commerce last week definitely sidetracked coal legislation for this session. The senate has refused to take up the Copeland coal bill which is on its calendar. Some well-driven efforts must be made by the coal industry to offset legislation for government control in fuel crises in the next session of congress, however.

This being a pre-election session, the struggle in congress for coal legislation early resolved itself into a fight on the basis of political personalities. Therefore, it is better that congress procrastinated itself into neglect of coal problems while in the heat of political passion. The coal question is one that should be considered calmly and without political warpaint. Many evils can come to business by hastily-advised control measures for the coal industry. What business generally wants is an intelligent study of coal problems, and this seemed to be impossible for the great bulk of congress at this session.

Co-operating in Copper

ARE American copper producers, aided by a number of European producers, setting out to do the thing for which British rubber producers were criticised?

On the face of it, American copper men are inviting into their organization the other important factors in the open world market and are forming one of the most complete organizations in control of a great world market that business history records, while the British rubber affair did not include a number of important competitive districts outside of the Malay peninsula. The conduct of the British rubber market was regulated by a specific law, while the copper organization is merely in accord with a general law on export organizations. To the extent that its activities are conducted in a foreign headquarters, it is outside of American law, in a place where the getting together of the factors in a market are not looked on in the light that they are in this country where anti-trust laws are a power in business organization.

However, several vital differences exist between the American and the British organizations. In rubber the market was controlled by restricting output, and then letting it out with rising prices. The copper men are specifically avoiding control of output, either in this country or abroad. They are co-operating in sales and controlling export prices as market conditions appear to warrant. That makes a world of difference and is far more in accord with free economic principles.

What Our Readers Are Thinking

Peppered the Iron With the Ore

To the Editor:

W. W. HEARNE'S excellent articles in IRON TRADE REVIEW entitled "Auld Acquaintances" is greatly appreciated by those who knew them, and this history will keep a clear perspective of those days in mind. Possibly the following anecdotes will be of interest:

While Matthew Addy was still a cotton factor, a pompous southern planter came in and asked to see one of the partners. When Mr. Addy told him he was one of them, the customer asked for the older partner as he did no business with boys.

Before introducing his partner, who was only 26 years old, Mr. Addy saved this account by reminding the customer of the very satisfactory way his business had been handled by the firm.

* * *

Sentiment in business in those days was shown by the son of M. A. Hanna, who blew in their new furnace at a great risk before it was dry, so that he could give pleasure to his father by telling him, on his death bed, that the furnace was in, and had made a successful cast.

* * *

It was hard for some of those who made their fortunes to realize that they had not always had money. When Henry Hanna was asked by an office boy what precept he had followed so he could use it and also become wealthy, Mr. Hanna told him that he "never invested more than $100,000 in any one enterprise," which advice could hardly be of value to the lad at that time.

* * *

Buyers formerly laid great stress on the ore mixture; one blast furnace owner, who used only mill cinder had printed across his letterhead "No Mill Cinder Used," and another who still claimed an admixture of Hanging Rock ore, after these beds were exhausted salved his conscience by dusting some of this ore from a pepper box over his stock piles.

* * *

A blast furnace superintendent, after working day and night for a couple of weeks to save his furnace, thought he had done so, and went off hunting. Unfortunately, the furnace toppled over, and its owner wired him "to keep on hunting as he had been fired."

* * *

Walter Rhodes' new office boy thought he would get in with him by saying he would not take a vacation. Mr. Rhodes said: "Unless you take a vacation you can leave at once, as I will have no one in my employ who will not take at least two weeks off each year."

* * *

L. B. Harrison, later president of the First National bank in Cincinnati, was a merchant in that city in 1858. In that year he settled a debt owed to him for groceries, etc., by a furnace at Hanging Rock, Ohio, by taking several hundred tons of charcoal iron at a valuation of $16 a ton. This iron he stored in the basement of his business place and kept it there until 1868, when he sold it for more than $100 a ton.

ELIOT A. KEBLER,
President, Fawcus Machine Co., Pittsburgh.

The Reader's Page

Vol. LXXVIII, No. 25 IRON TRADE REVIEW June 24, 1926

Industrial Expansion Facts Worth Keeping

SOME articles that appear in business papers immediately suggest to readers the desirability of keeping them close at hand for reference, they contain so much information of fundamental character. Magnus W. Alexander, president, National Industrial Conference board, has the faculty of compressing into small space a large volume of facts and statistics pertaining to industrial matters, presenting them in such a way that they are easily understood. The article on page 1622 of this issue reveals his ability in this respect at its best; it gives a clear picture of industrial expansion in the United States. The increase in mechanical power per wage earner, and reduction in the amount of energy required per unit of output is one point in the article that explains why American manufacturers with high wage rates compete with products of foreign labor.

Exposition Features Steel Construction. Page 1613.

Contents

SPECIAL ARTICLES

Sesqui-centennial Buildings Made Permanent with Steel 1613

Train Carries $500,000 Worth of Tungsten Ore 1616

Bethlehem Merchant Bar Mills Under Power ..... *By John D. Knox* 1617

Industry's "Silent Revolution" and What it Portends ..... *By Magnus W. Alexander* 1622

Theory and Practice of Rolling Steel—Chap. V Cont. ..... *By Wilhelm Tafel* 1626

Distribution of Lake Superior Iron Ore 1632

Felling Blast Furnace in 40-foot Space 1633

Editorials 1635

BUSINESS TREND

Business Index Above 1925 .... *By John W. Hill* 1638

Barometer of Business 1638
Business Index 1639
Automobile Production 1639
Foreign Trade 1640
Machine Tools 1640
Steel Prices 1641
Foundry Equipment..1641

MARKET REPORTS

Review of Markets ..... *By C. J. Stark* 1642
Iron and Steel Prices 1643, 1644, 1648, 1656, 1676

Pig Iron 1645
Coke 1646
Ferroalloys 1646
Semifinished 1647
Plates 1647
Iron and Steel Scrap 1649
Sheets 1649
Tin Plate 1650
Pipe 1650
Bars 1651
Nuts, Bolts, Rivets ..1651
Cold-Finished Steel ..1651
Iron Ore 1651
Structural Shapes 1652
Reinforcing Bars 1653
Railroad Equipment ..1654
Wire and Nails 1654
Nonferrous Metals 1655
Coke By-Products 1655
Warehouse 1656
Pacific Coast Markets 1657
Foreign Markets 1658
Machinery Markets ..1670
Crane Inquiry and Awards 1670

GENERAL NEWS

Show New Foundry Equipment in London 1630
Steel Imports Up; Exports Drop 1660
Distribution Draws Emphasis 1661
Steel Production of United States for 1925 1662
Industrial Men in the Day's News—*John Hulst* 1665

Here and There in Industry 1664
Men of Industry 1665
Obituary 1666
Business Changes 1669
Construction and Enterprise 1671
New Trade Publications 1674

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The Business Trend

Business Index Holds Above 1925

By JOHN W. HILL, Financial Editor

THE curve of industrial activity, depicted by IRON TRADE REVIEW'S Monthly Business Index, turned slightly downward in May. Such a recession has been a normal development at this season during recent years. In the present instance the movement merely is distinguished by its mildness.

THE Business Index discloses that the level of industry continues higher than it was one year ago. In both 1924 and 1925 the recession in industry during the spring was a prelude to further slackening in the summer. In both these years autumn brought recovery in general activities.

CURIOUSLY enough this year signs of improvement in iron and steel have appeared in June. The conclusion to be drawn from this is that production fell a little behind consumption a month or two ago. With motor car output and building activities continuing on a high plane, despite some slowing down from the peak, no severe summer drop in steel operation now is indicated. What is true of steel should hold for general industry.

THE factors of the Business Index which declined in May were pig iron production, cotton consumption, building construction, coal output, and Bradstreet's price number. Freight movements were the only factor showing an increase. Here again is evidence of the continuing high rate of distribution and consumption.

THE truth is that the economic and financial scenes have shifted so materially in recent years that the outlook cannot be judged by old standards. The revolutionary changes in living standards and in productive efficiency; the wide dissemination of trade information; the flood of easy credit with the profound influence of the federal reserve system have created a set of new conditions affecting business.

CERTAINLY at the moment the most important fundamental result of these new conditions is that they should enable industry to avoid a drastic recession. For the immediate future this seems assured. One by one many of the recently disturbing factors have grown less unfavorable. Among other things May brought a favorable balance of trade.

The Barometer of Business

Industrial Indicators

	May, 1926	One month ago	One year ago	1913
Pig iron output (Daily average, tons)	112,000	114,963	94,501	83,900
Blast furnace index 60 per cent = normal	60.9	63	.....	62.8
Unfilled orders (tons)	3,649,250	3,867,976	4,049,800	4,513,000
Ingot output (Daily average, tons)	151,744	158,613	132,800	.....
Dodge Bldg., awards in 27 states (sq. ft.)	71,000,000	72,600,000	68,864,900	31,250,000
Automobile output	425,000	455,000	432,000	.....
Coal output, tons	39,000,000	40,445,000	36,048,000	39,869,000
Business failures; number	1,730	1,957	1,767	1,336
Business failures; liabilities	$33,543,318	$38,487,000	$37,026,552	$22,732,000
Cement production, Bbls.	16,467,000	12,403,000	15,503,000	7,704,000
Cotton consumption, bales	516,758	575,000	531,471	438,218
Car loadings (weekly average)	1,028,000	950,000	970,000	.....

Foreign Trade

	May	One month ago	One year ago	1913
Exports	$356,000,000	$387,800,000	$370,945,000	$194,000,000
Imports	$318,000,000	$397,942,000	$327,518,000	$149,900,000
Gold imports	$2,934,665	$13,125,633	$11,392,837	$5,234,000
Gold exports	$9,342,927	$17,883,865	$13,389,967	$5,900,000

Foreign Exchange

	Normal	June 21, 1926	One month ago	One year ago
Sterling	$4.86	$4.86	$4.86	$4.85
Francs	19.3c	2.86c	3.05c	4.72c
Lira	19.3c	3.61c	3.91c	3.75c
Marks	23.8c	23.8c	23.8c	23.8c

Financial Indicators

	June 21	One month ago	One year ago	1913
25 Industrial stocks	**$159.00	$145.73	$144.94	$58.19
25 Rail stocks	**$92.72	$87.63	$79.52	$82.90
40 Bonds	**$87.66	$87.60	$84.81	$93.00
Bank clearings (000 omitted)	$42,411,631	$45,536,492	$41,886,240	$13,895,000
Commercial paper rate (N. Y., per cent)	4.12	4.25	4	5.60
*Commercial loans (000 omitted)	$8,394,000	$8,495,000	$8,039,000	.....
Federal reserve ratio, per cent	75	75.7	76	.....
Railroad earnings	†$76,000,000	$94,500,000	$66,000,000	$59,301,000
Stock sales, N. Y. stock exchange	23,341,144	30,326,714	36,647,760	6,924,000
Bond sales, par value	$236,568,000	$304,514,000	$344,880,075	$41,499,000

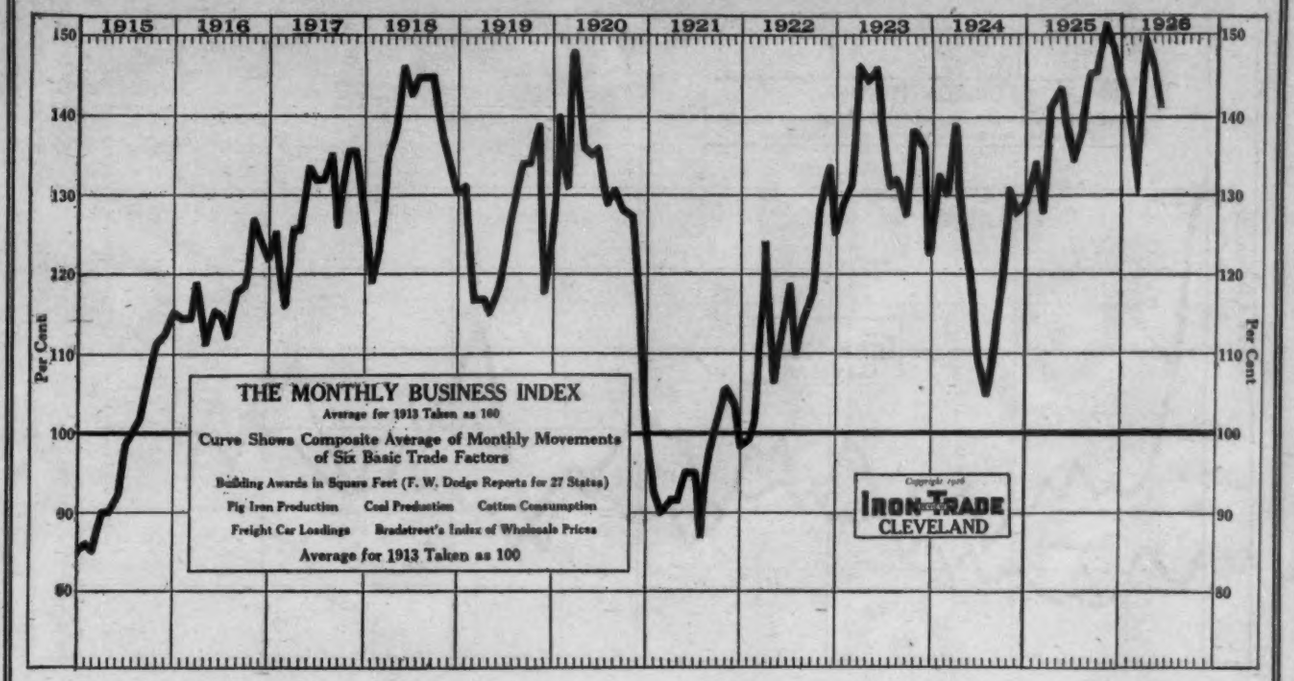
*Leading member banks Federal Reserve System.
†April, 1925.
**June 21, 1926.

Commodity Prices

	June 1	One month ago	One year ago	1913
Statistics	151.7	151.1	155	100
Bradstreet's index	138	140	147	100
Economist's (British)	148	149	164	100
Wheat, cash (bushel)	†$1.49	$1.68	$1.63	92c
Corn, cash (bushel)	†70c	73c	$1.12	51c
Petroleum, crude (Bbl.)	†$3.65	$3.65	$3.80	$2.50

†June 21.

The Business Trend

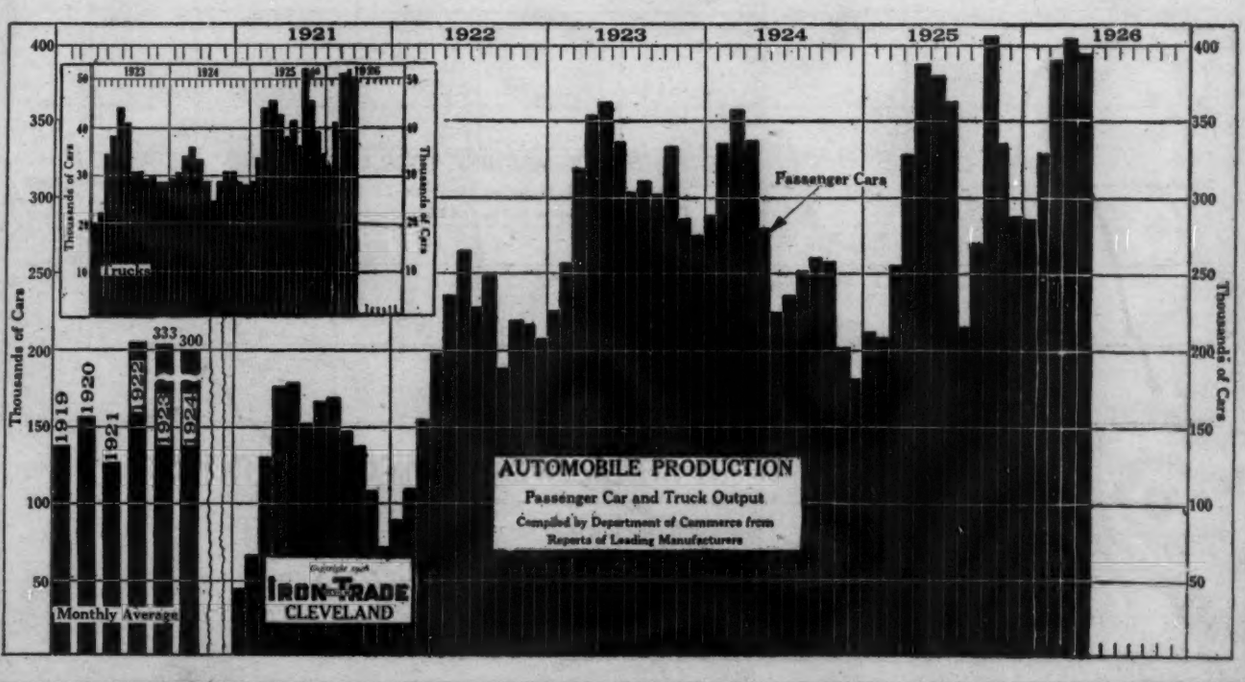


Business Index

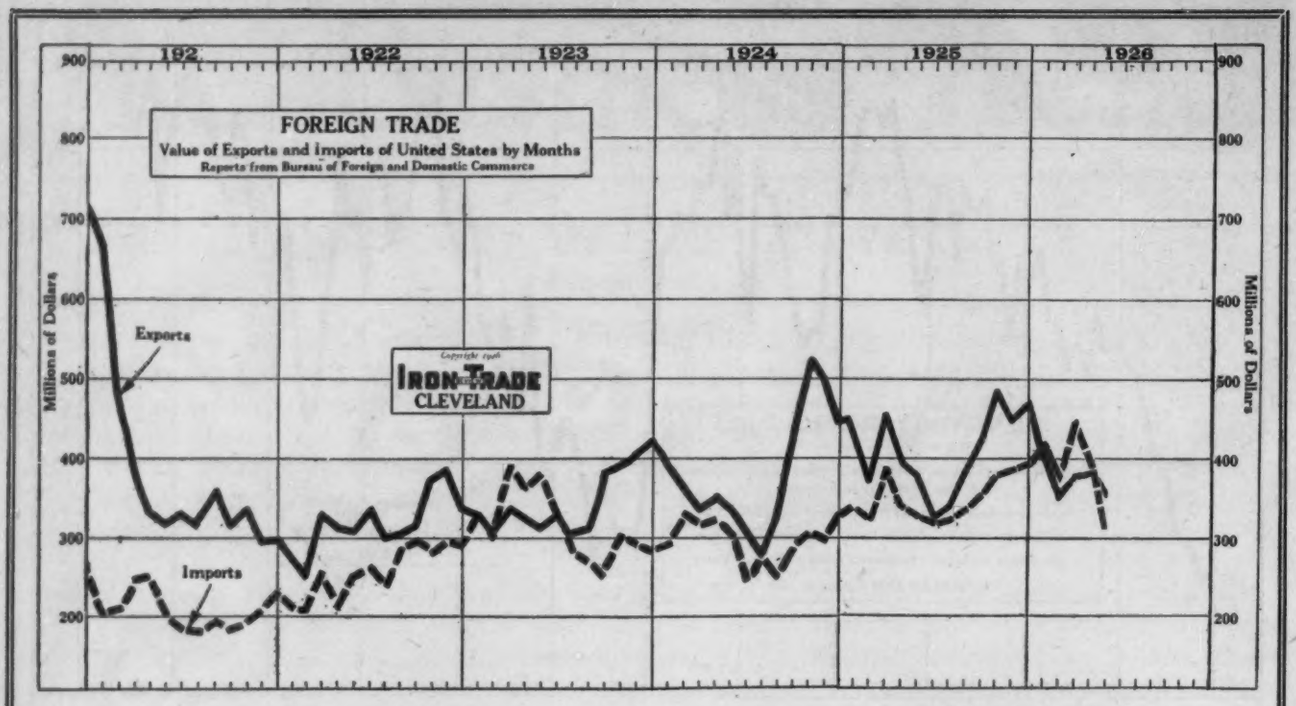
IRON TRADE REVIEW'S Monthly Business Index reflects some seasonal slowing down of industrial activity in May. The Index stands at 142 compared with 146 in April and 149.9 in March, the peak of the year. The Index stood at 138.7 one year before. Declines were shown in the factors, comprising the index, of pig iron production, Bradstreet's prices, coal output, cotton consumption and building construction while an increase occurred for railroad freight traffic.

Automobile Production

THE production of automobiles in May as reported to the department of commerce amounted to 394,781 passenger cars and 51,374 trucks. This compared with 402,577 passenger cars and 53,301 trucks in April. In May, 1925 there were 384,548 passenger cars produced and 45,718 trucks. For the first five months of the year the number of passenger cars produced was 1,816,527, an increase of 15 per cent over the figure for last year, and the number of trucks made was 226,997, an increase of 14 per cent.



The Business Trend

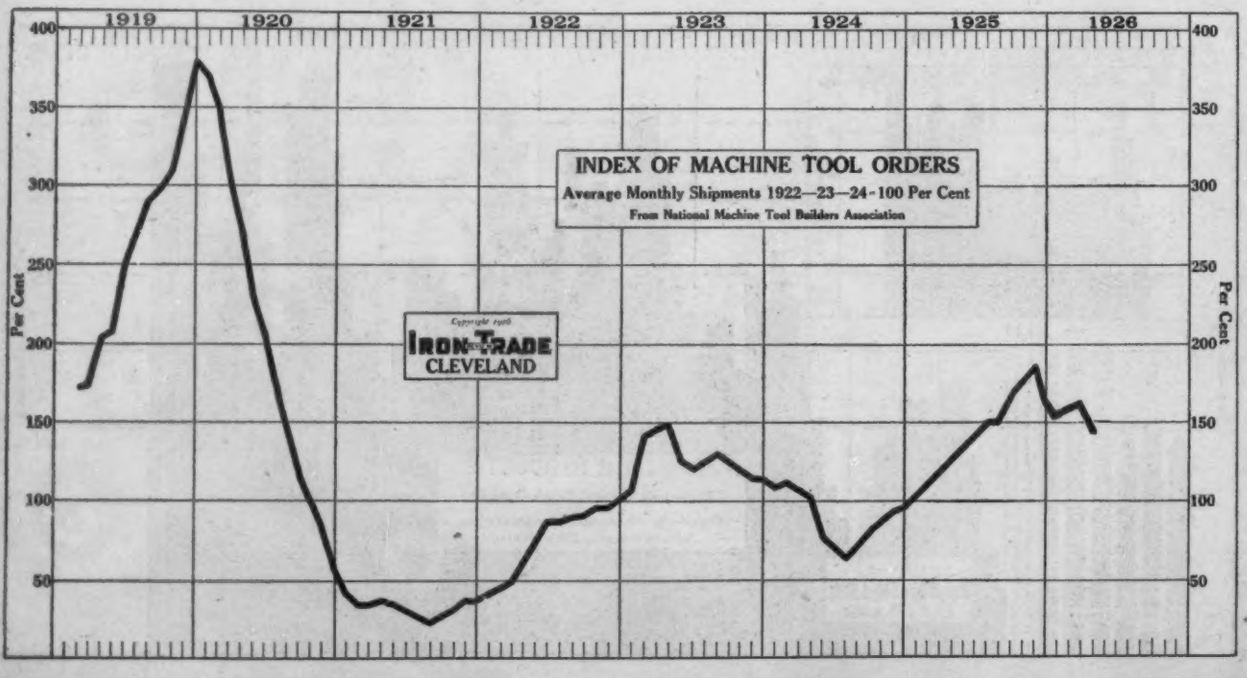


Foreign Trade

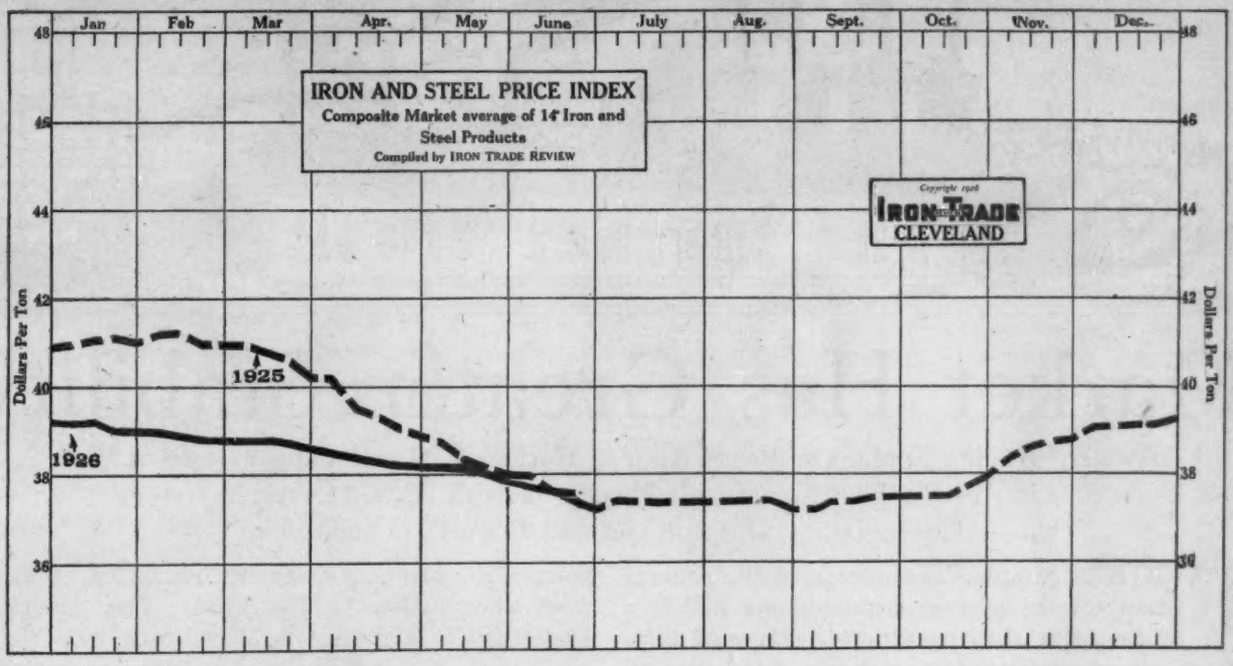
FOR the first time in 1926 exports of merchandise in May exceeded imports. Total exports in May amounted to $356,000,000 compared with $387,000,000 in April and $371,000,000 in May, 1925. Imports were the smallest since last February. Imports amounted to $318,000,000 and they were the smallest since November, 1924. They compared with $398,000,000 in April. Exports exceeded imports by $38,000,000. During the first four months of the year imports exceeded exports by $135,000,000.

Machine Tools

THE index of machine tool orders as computed by National Machine Tool Builders association shows a decline. The curve on the chart pictures a three months' average of orders. This average for the three months ending in May stood at 143 compared with 151 one month before. The decline in orders coincides with some slackening in general industrial activities which occurred in May. The machine tool industry is one of the first to feel any declining tendency in business.



The Business Trend

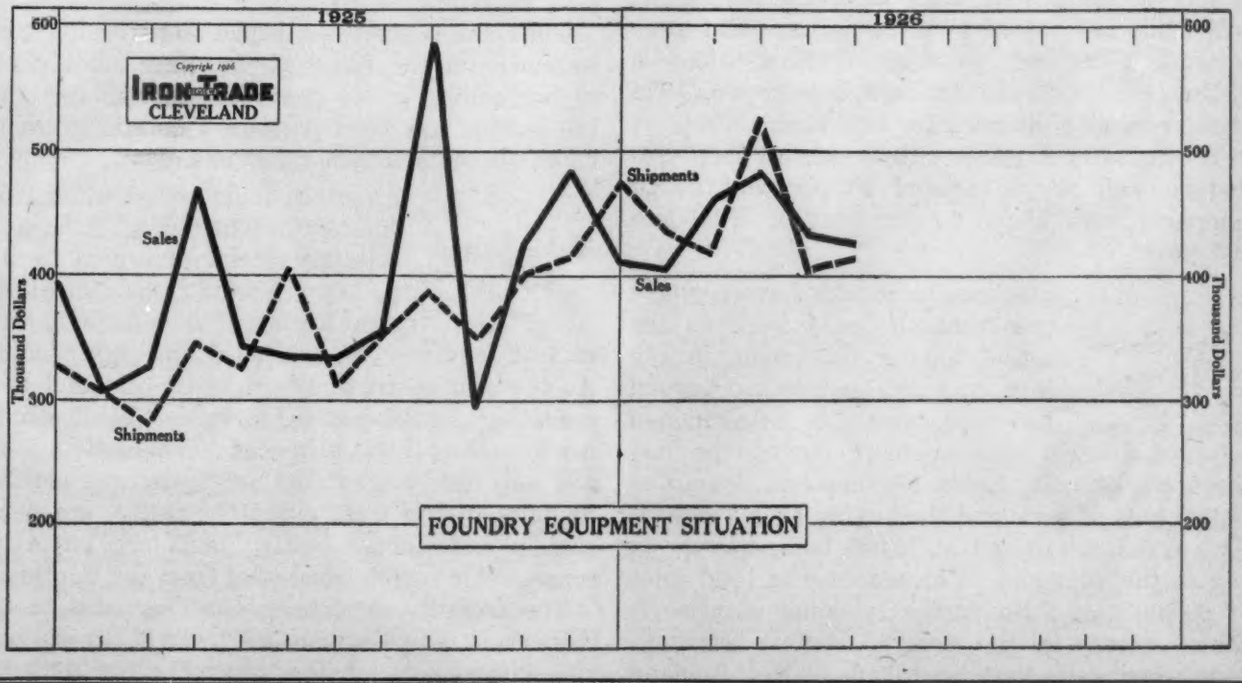


Steel Prices

DESPITE some strengthening of certain steel prices, the composite market average of 14 iron and steel products computed by IRON TRADE REVIEW, continues to recede. This has been due largely to softness for pig iron. The decline in prices, however, is not so marked as it was at this time a year ago and the composite averages now is on a higher level than it was last year at this date. The market average is 42 per cent over its 1913 level compared with more than 50 per cent over 1913 for general prices.

Foundry Equipment

SALES of foundry equipment in May continued gradually to decline, according to the figures compiled by the Foundry Equipment Manufacturers association. Sales in May, of reporting companies, amounted to $425,000 compared with $434,000 in April and $482,000 in March. Shipments made some increase in May and the total for the month for the same companies amounted to $415,000 compared with $402,000 in April. In March, however, shipments amounted to $525,000.



Market Has Greater Stability

Forward Buying Spreads as Prices Appear More Settled and Consumption Is Well Sustained—Pig Iron Covering Is Heavy—British Orders Diverted Here—Countervailing Duty on German Imports Is Suspended

FURTHER progress is apparent in the general trend toward greater firmness and stability of iron and steel conditions. Forward buying has kept on spreading as prices have become more settled and new requirements have shown that consumption is holding up in places where it was expected to recede considerably. Producers express their surprise at the volume of buying and general vitality of the market at this summer period especially following the heavy shipments of the earlier months.

Users of merchant bars have been contracting liberally for third quarter especially in territory drawing on Chicago mills. A leading producer there has booked 95 per cent more tonnage of bars the first three weeks of June than in the corresponding period in May. One 10,000-ton engagement in Ohio territory was made. Pipe is closely pressing steel bars as a market leader, with mills running at 85 to 90 per cent and more capacity going in. Shading of wire prices is disappearing as June tonnage has grown. Tin plate demand is unusual for this season.

The industry at large still is able to keep production well pegged around 80 per cent which compares with about 65 per cent at this date last year.

Iron Sales Large

Steelmaking grades have come to the front the past week as the active buying movement in pig iron for third quarter and beyond has been carried to an estimated total of 500,000 tons or more during the last three weeks. St. Louis steelmakers closed for 45,000 tons of basic and the buying by a Newport, Ky., works now is put at 75,000 tons, delivery to run to the year end. Chicago reports total sales of 60,000 tons. No further yielding of price is shown except in the case of Buffalo territory, from which sales have been made to New England below $19, furnace, a further reduction of $1 to meet competition to the East. The American Radiator Co. is closing on 50,000 tons or more.

Building Is Active

Building steel activity is high. May awards of 234,850 tons or 77 per cent of shop capacity were well ahead of May, 1925, with 207,400 tons and 68 per cent, and were the largest since October. Awards this week ran up to 39,631 tons.

Railroad buying this week is marked by 55,000 tons of rails placed by the Norfolk & Western. The Southern also closed for 10,000 tons.

Less demoralization is shown in sheets and buying is better. Jobbers have been placing some large orders. Figures just available show sheet shipments in May dipped from 89.1 to 85.1 per cent but sales fell sharply from 77.1 to 64.3 per cent of capacity.

The scrap market has firmed up perceptibly, not so much on the basis of consumer sales as on higher asking prices from dealers who feel that the bottom has been passed. Quotations are up 25 to 50 cents in some districts.

Take British Orders

American mills are profiting from the tieup of British steel capacity through receipt of orders for tin plate and sheets from neutral and also European destinations, with various inquiries for additional amounts pending. As the coal controversy proceeds, iron and steel operating conditions in Britain are becoming worse. More blast furnaces have been put out and only two stacks now are active in Scotland. Supplies of pig iron, except hematite, are being rapidly exhausted. British mills are importing considerable semifinished steel from the Continent.

The treasury department has acceeded to the request of the German government to suspend the enforcement of the countervailing duty re-

cently imposed on imports of such German iron and steel products as are believed to receive bounties, until a more complete investigation can be made. It is questioned that certain products come within the scope of the extra duty.

Pig iron imports in May of 57,211 tons largely from Germany made up most of the 108,731 tons of iron and steel received. Exports were lower with 173,418 tons.

An almost balanced price situation is reflected by IRON TRADE REVIEW composite of fourteen leading iron and steel products which is only 2 cents lower, or $37.58. This is the smallest change in six weeks.

Prices, Present and Past

Representative Market Figures for This Week, Last Month, Three Months and One Year Ago

	June 23, 1926	May, 1926	Mar., 1926	June, 1925
PIG IRON				
Bessemer, valley, del., Pittsburgh	$20.76	21.01	22.76	20.76
Basic, valley	17.50	18.25	20.00	18.15
Basic, eastern del., eastern Pa.	21.75	21.75	22.20	21.50
*No. 2 foundry, del., Pittsburgh	19.76	20.76	22.26	20.11
No. 2 foundry, Chicago	21.00	21.65	23.50	20.25
*Southern, No. 2, Birmingham	21.00	22.00	22.00	19.00
*Southern Ohio, No. 2 Ironton	19.00	20.00	21.00	18.75
**No. 2X, Virginia furnace	23.00	23.00	23.25	23.00
**No. 2X, eastern del. Phila	22.76	23.01	23.26	21.51
Malleable, valley	18.00	19.00	20.50	18.50
Malleable, Chicago	21.00	21.65	23.00	20.25
Lake Superior charcoal, Chicago	29.04	29.04	29.04	29.04
Gray forge, val., del., Pittsburgh	19.26	20.26	21.76	19.61
Ferromanganese, del., Pittsburgh	92.79	92.79	102.29	119.79
*1.75 to 2.25 silicon. **2.25 to 2.75 silicon.				
COKE				
Connellsville, furnace, ovens	2.60	2.85	3.15	2.80
Connellsville, foundry, ovens	3.75	3.85	4.45	3.75
SEMIFINISHED MATERIAL				
Sheet bars, open-hearth, Youngstown	36.00	36.00	36.00	35.00
Sheet bars, open-hearth, Pittsburgh	36.00	36.00	36.00	35.00
Billets, open-hearth, Pittsburgh	35.00	35.00	35.00	35.00
Wire rods, Pittsburgh	45.00	45.00	45.00	45.25
FINISHED MATERIAL				
Steel bars, Pittsburgh	1.90	1.95	2.00	2.00
Steel bars, Chicago	2.10	2.10	2.10	2.10
Steel bars, Philadelphia	2.22	2.27	2.22	2.32
Iron bars, Philadelphia	2.22	2.22	2.22	2.22
Iron bars, Chicago, mill	2.00	2.00	2.00	2.05
Beams, Pittsburgh	1.90	1.90	1.90	2.00
Beams, Philadelphia	2.22	2.22	2.22	2.22
Beams, Chicago	2.10	2.10	2.10	2.20
Tank plates, Pittsburgh	1.90	1.90	1.85	1.95
Tank plates, Philadelphia	2.22	2.22	2.17	2.22
Tank plates, Chicago	2.10	2.10	2.10	2.20
Sheets, black, No. 28, Pittsburgh	3.10	3.20	3.25	3.15
Sheets, blue anl., No. 10, Pittsburgh	2.30	2.45	2.50	2.30
Sheets, galvanized, No. 28, Pittsburgh	4.30	4.55	4.60	4.25
Sheets, black, No. 28, Chicago	3.35	3.40	3.50	3.40
Sheets, blue anl. No. 10, Chicago	2.55	2.65	2.65	2.50
Sheets, galvanized, No. 28, Chicago	4.55	4.65	4.75	4.50
Wire nails, Pittsburgh	2.65	2.65	2.65	2.70
Wire nails, Chicago	2.70	2.70	2.70	2.90
Tin plate per base box, Pittsburgh	$5.50	5.50	5.50	5.50
OLD MATERIAL				
Heavy melting steel, Pittsburgh	16.00	16.00	17.70	17.10
Heavy melting steel, eastern Pa.	15.25	15.25	16.20	15.65
Heavy melting steel, Chicago	12.75	12.25	14.00	15.90
No. 1 wrought, eastern Pa.	17.00	17.35	18.00	18.20
No. 1 wrought, Chicago	12.75	12.55	14.50	15.90
Rails for rolling, Chicago	15.25	14.95	16.50	18.15

Composite Market Average

The Fourteen Leading Iron and Steel Products Included are Pig Iron, Billets, Slabs, Sheet Bars, Wire Rods, Steel Bars, Plates, Structural Shapes, Black, Galvanized and Blue Annealed Sheets, Tin Plate, Wire Nails and Black Pipe

This week (June 23, 1926)	$37.58
Last week (June 16, 1926)	37.60
One month ago (May, 1926)	38.22
Three months ago (March, 1926)	38.88
One year ago (June, 1925)	37.60
Ten years ago (June, 1916)	39.63
Thirteen years ago (June, 1913)	26.78

Late News Flashes

May Steel Castings Output Drops

Washington, June 22.—Steel castings bookings in May dropped to 79,003 tons from 86,826 tons in April according to reports to the department of commerce from 107 companies. Production totaled 95,734 tons or 73 per cent of capacity, a drop from 105,735 tons and 81 per cent in April.

Structural Bookings Largest Since October

Washington, June 22.—Fabricated steel bookings, computed from reports of 180 companies to the department of commerce, totaled 234,850 tons in May or the highest since October when 271,450 tons was booked. May bookings were at 77 per cent of capacity, compared with 68 per cent for the same month of 1925.

Chicago Output Gains Steadily

Chicago, June 22.—Steel ingot operations in the Chicago district are averaging 88 to 89 per cent this week, showing a slight gain over last week. Capacity operations of rail mills and heavy bar mill schedules largely account for this rate. Illinois Steel Co. continues to operate 20 of its 23 stacks at Gary and South Chicago, having shown no deviation in months. Twenty-eight of the 36 steel works stacks in the Chicago district are active.

Pittsburgh Holds Its Own

Pittsburgh, June 22.—Steel mill operations continue for the most part unchanged in this district, averaging about 80 per cent. Steel corporation mills are a little higher than that but independents generally are about on a 75 per cent basis. Sheetmaking is increased a trifle in one or two directions in this territory 6 to 8 per cent, and the general average is nearer 65 than 60 per cent. Pipemaking continues at the head of the list, all mills running practically full.

Higher German Duty Suspended

Washington, June 23.—Officials in the treasury department today stated that the recent countervailing duty imposed on German iron and steel imports to offset bounties paid by the Raw Steel Syndicate in that country will be suspended until further notice pending a more complete investigation. This action was taken at the request of the German ambassador to the state department that the effective date be deferred until the German government could explain the agreement between the steel syndicate and the iron consuming industries of Germany. In the meantime, German iron and steel imports were to be liquidated in the usual manner. No date has been set for the countervailing duty to take effect.

Current Rolled Steel Prices

PRICES, CENTS PER POUND, UNLESS OTHERWISE STATED

Semifinished Material

Prices per gross ton

BILLETS AND BLOOMS

4 x 4-inch base

Pittsburgh, open-hearth	$35.00
Pittsburgh, bessemer	35.00
Youngstown	35.00
Philadelphia	40.30
Chicago	35.00
Forging, Pittsburgh	40.00
Forging, Philadelphia	44.30 to 45.30

SHEET BARS

Pittsburgh	$36.00
Youngstown	36.00

SLABS

Pittsburgh	$35.00
Youngstown	35.00

WIRE RODS

Pittsburgh	$45.00
Cleveland	45.00
Chicago	46.00

Standard extras, $5 for screw stock; $15 for acid wire rods. Carbon extras, $3 for 0.20 to 0.40; $5 for 0.41 to 0.55; $7.50 for 0.56 to 0.75; $10 over 0.75.

SKELP

Grooved skelp	1.90c
Universal skelp, Pittsburgh	1.90c
Sheared skelp, Pittsburgh	1.90c

Structural Shapes

Pittsburgh	1.90c to 2.00c
Philadelphia	2.22c to 2.32c
New York	2.24c to 2.34c
Chicago	2.10c to 2.20c
Cleveland	2.09c
Birmingham	2.05c to 2.15c

Steel Plates

Pittsburgh	1.90c to 2.00c
Philadelphia	2.22c
New York	2.24c
Chicago	2.10c to 2.20c
Cleveland	2.09c
Birmingham	2.00c to 2.10c

Iron and Steel Bars

Pittsburgh, soft steel	1.90c to 2.00c
Pittsburgh, cold finishing	2.05c to 2.15c
Pittsburgh, forging quality	2.05c to 2.15c
Philadelphia, soft steel	2.22c to 2.42c
New York, soft steel	2.24c to 2.44c
Chicago, soft steel	2.10c to 2.20c
Cleveland, soft steel	2.09c to 2.19c
Birmingham, soft steel	2.05c to 2.15c
San Francisco, soft steel	2.60c
Pittsburgh, refined iron	3.00c to 4.50c
Pittsburgh, reinforcing billet	2.00c
Youngstown, reinf. billet, base	1.90c to 2.00c
Chicago, rail steel	1.90c to 2.00c
Mill rail steel	1.85c to 1.95c
Philadelphia, common iron	2.17c to 2.22c
New York, common iron	2.19c to 2.24c
Chicago, common iron	2.00c

Hoops, Bands, Strips

Hoops, Pittsburgh, 6 inches and under	2.50c
Bands, Pittsburgh, 6 inches and under	2.50c
Bands, Pittsburgh over 6 in.	2.30c
Hot rolled strip steel, Pittsburgh stamping quality	2.30c
Hot rolled strip steel, Chicago	2.50c to 2.60c
Bands, Chicago, under 6 inches	2.60c
Bands, Chicago, 6 in. and over	2.50c
Cold rolled strip steel, hard coils, 1½ inches and wider by 0.100-inch and heavier, base, Pittsburgh	3.60c to 3.75c
Worcester, Mass	4.05c
Chicago	4.20c

Cold Finished Steel

Cold finished steel bars, drawn, or rolled Pittsburgh, Chicago carloads	2.50c
Less carload	2.75c
Steel shafting turned and polished Pittsburgh, Chicago	2.60c

Screw stock base Cleveland $1 higher; and Worcester $3 higher than Pittsburgh and Chicago.

Hot Rolled Alloy Steel

Pittsburgh or Chicago

S. A. E. Series—

2300 (3½ per cent nickel)	4.40c to 4.50c
3100 (Nickel chromium)	3.40c to 3.50c
6100 (Chrome vanadium)	4.25c to 4.30c
6100 (Chrome vanad. spring)	3.85c
9250 (Silico-mang. spring)	3.25c

Rails, Track Material

Standard bessemer rails, mill	$43.00
Standard open-h'th rails, mill	43.00
Relaying rails, St. Louis	24.00 to 31.00
Relaying rails, Pittsburgh	23.00 to 25.00
Light rails, 25 to 45 mills	34.00 to 36.00
Angle bars, Chicago base	2.75c
Spikes, railroad, Pittsburgh	2.80c
Spikes, small railroad, 7-16-inch and smaller, Pitts	2.90c to 3.00c
Spikes, boat and barge, Pitts.	3.25c
Spikes, railroad, Chicago	2.90c to 3.00c
Track bolts, Pitts. standard	3.90c to 4.15c
Track bolts, Chicago	3.90c to 4.15c
Tie plates, Chicago	2.35c
Tie plates, Pittsburgh	2.25c to 2.35c

Wire Products

To Jobbers in Carloads

Dealers 5 cents per 100 pounds extra

F.o.b. Cleveland and Pittsburgh base	
Wire nails	2.65c
Galv'd nails smaller than 1-inch	4.90c
Galv'd nails, 1-inch and over	4.65c
Plain wire	2.50c
Annealed wire	2.65c
Galvanized wire No. 9 gage	3.10c
Barbed wire, painted	3.10c
Barbed wire, galvanized	3.35c
Polished staples	3.10c
Galvanized staples	3.35c

Coated nails, 100 pound kegs, subject to card of extras Feb. 1, 1926 over regular wire nail base.

Woven wire fencing (retailers) 12½ gage, 26-in. high 7-in. bars and 12-in. stays, per 100 rods, f.o.b. Pitts	$26.03

Joliet, DeKalb and Waukegan, Ill., and Anderson, Ind., prices $1 per ton over Cleveland-Pittsburgh base on products made there; Chicago $1 higher; Duluth $2 higher and Worcester, Mass., and Fairfield, Ala., $3 higher.

Sheets

SHEET MILL BLACK

No. 28, Pittsburgh, base	3.00c to 3.15c
No. 28, Philadelphia, delivered	3.32c to 3.57c
No. 28, Gary, Indiana Harbor	3.30c
No. 28, Chicago, delivered	3.35c

TIN MILL, BLACK

No. 28, Pittsburgh	3.00c to 3.15c
No. 28, Gary base	3.45c

GALVANIZED

No. 28, Pittsburgh, base	4.20c to 4.40c
No. 28, Philadelphia, delivered	4.62c to 4.72c
No. 28, Gary, Indiana Harbor	4.50c
No. 28, Chicago, delivered	4.55c

BLUE ANNEALED

No. 10, Pittsburgh, base	2.30c to 2.40c
No. 10, Philadelphia, delivered	2.62c to 2.72c
No. 10, Gary, Indiana Harbor	2.50c
No. 10, Chicago, delivered	2.55c

AUTOMOBILE SHEETS

No. 22, Pittsburgh, base	4.20c

Tin and Terne Plate

Prices per 100-pound box, Pittsburgh

*Tin plate, coke base	$5.50

Gary, Ind., base 10 cents higher.

Long ternes, base	4.85

*This price is subject to quantity differentials established by individual regulations.

Iron and Steel Pipe

Base Discounts Pittsburgh and Lorain, O. to Jobbers in Carloads

	Black	Galv.
1 to 3-inch butt steel	62	50½
1 to 1½-inch, butt iron	30	13

Indiana Harbor, Ind., and Evanston, Ill., 2 points less and $4 per ton higher. Chicago delivered 2½ points less and $5 per ton higher.

Boiler Tubes

Less Carload Discounts—Carloads 4 Points Additional—F.o.b. Pittsburgh Mills

Steel 3¼ to 3¾-inch	68½
Charcoal iron, 3¼ to 4½-inch	5

Seamless hot rolled, 3¼ to 3½-inch 46 off

Additional discounts of several 5 per cents being allowed.

Chain, Piling, Cut Nails

Chain, 1-in. proof coil, Pitts.	6.00c
Sheet piling base, Pittsburgh	2.25c to 2.30c
Cut nails, c. l., f.o.b. mills	2.80c

Cast Iron Water Pipe

Prices per net ton

Class B Pipe

Four-inch, Chicago	$52.20 to 53.20
Six-inch to 24-inch, Chicago	48.20 to 49.20
Over 24-inch, Chicago	45.20
Four-inch, Birmingham	44.00 to 45.00
Six-inch and over, Birmingham	40.00 to 41.00
Four-inch, New York	56.50 to 57.60
Six-inch and over, New York	51.50 to 52.60
Standard fittings, Birmingham base	$110.00,

6 to 24-inch, base; over 24-inch, plus $20; 4-inch, plus $20; 3-inch, plus $20; gas pipe fittings, $5 higher.

Class A pipe is $5 higher than Class B

Nuts and Bolts

F.o.b. basing points, Pittsburgh, Cleveland, Birmingham and Chicago.

Hot pressed square tapped or blank	$4.00 off list
Hot pressed hexagon tapped or blank	$4.40 off list
Cold punched square or hexagon blank	$4.10 off list
Cold punched square or hexagon tapped or blank	$4.10 off list
Cold punched U. S. S. semifinished hexagon nuts ⅝-inch and larger	75, 10 and 5 off
Cold punched U. S. S. semifinished hexagon nuts 9/16-inch and smaller	80, 10 and 5 off
Cold finished S. A. E. semifinished ⅝-inch and larger	75, 10, 10 and 5 off
Cold finished S. A. E. semifinished 9/16-inch and smaller	80, 10, 10 and 5 off

CARRIAGE BOLTS

(⅝ x 6-inch, smaller and shorter)

Rolled thread	50, 10 and 10 off
Cut thread (all sizes)	50 and 10 off
Eagle carriage bolts (Eagle list)	65 and 10 off

MACHINE BOLTS

(⅝ x 4-inch, hot pressed nuts)

Rolled thread	60 and 10 off
Cut thread (all sizes)	50, 10 and 10 off

(All sizes cold punched nuts)

Cut thread	45, 10 and 5 off
Lag screws	60, 10 and 10 off
Plow bolts Nos. 3 and 7 heads	50 and 10 off
All other standard heads	50 and 10 off plus 20 per cent
Tap bolts	30 off
Bolt ends with hot pressed nuts	50, 10 and 10 off
Bolt ends with cold punched nuts	45, 10 and 5 off
Blank bolts	50, 10 and 10 off
Rough stud bolts with nuts (250 pieces or more of a size)	40 and 10 off
Stove bolts, 80, 10 and 5 off plus	2½ off

in bulk.

Tire bolts	60 and 5 off

SEMIFINISHED CASTELLATED AND SLOTTED NUTS

Per 1000, f.o.b. producer's plant, freight allowed

	S.A.E. Castellated	U.S.S. Slotted
¼	$ 4.40	$ 4.40
5/16	5.15	5.15
⅜	6.20	6.60
7/16	7.90	9.00
½	10.10	10.50
9/16	13.80	14.20
⅝	17.00	17.30
¾	28.50	24.00
⅞	36.00	36.00
1	55.50	58.00
1⅛	89.00	89.00
1¼	126.00	131.00
1⅜	183.50	183.50
1½	210.00	210.00

Larger sizes—Prices on application

HEXAGON CAP SCREWS

Milled	80 and 10 off
Upset	80, 10 and 10 off

SQUARE HEAD SET SCREWS

Milled	80 and 5 off
Upset	80, 10 and 5 off

Rivets

Structural rivets, carloads, Pittsburgh and Cleveland	2.50c to 2.60c
Structural rivets, carloads, Chicago	70, 10 and 5 to 70 and 10 off
**Rivets, 7/16-inch and smaller, Pittsburgh Cleveland	70 and 10 to 70 and 5 off
**Rivets, 7/16-inch and smaller Chicago	70, 10 and 5 to 70 and 10 off

**Some makers quoting 70 off with freight allowed on 300 pounds or more.

Washers

Wrought c.l., Chicago dist.	$6.30 to 6.40 off
Wrought c.l., Pitts dist	6.50 to 6.55 off
Lock washers, f.o.b. factory	$5 off

Pig Iron

Sales Continue to Mount; 500,000 Tons Placed on Furnace Books—Buffalo Iron Down $1 in Eastern Trading

FURNACE interests in the past week placed 200,000 tons additional on their order books, and the total of sales in the last three weeks is about 500,000 tons. The buying movement has extended to the Chicago district, where 60,000 tons was closed, with large inquiries still pending. At Cleveland, furnace interests report the week's sales as around 75,000 tons. Their sales for the three weeks in Ohio, Indiana, Michgian and western Pennsylvania and New York are about 225,000 tons. Buffalo foundry iron has sold slightly below $19, base, furnace, in eastern territory. In other districts the tone of the market is slightly firmer. Among large buyers now in the market is the American Radiator Co., whose present requirements are estimated at about 50,000 tons.

PITTSBURGH, June 22.—Pig iron inquiry is more widespread, particularly for foundry grades in lots up to 500 tons at a time. The Pennsylvania railroad is inquiring for 1000 tons for third quarter. Some consumers of 100 tons per month are asking prices for last half. While $18, base, valley still is available for spot and third quarter, some makers are holding for $18.50, minimum for last half or fourth quarter. Others adhering to $18.50 for either spot or third quarter so far are not selling except single carloads. While a middle interest purchased a tonnage of bessemer below $18.50, valley, it is understood the seller is liquidating its stock, hence the sale is no market criterion. Merchant furnaces are disposing of lots of 50 to 200 tons at a time at $19, valley. Basic largely is nominal in the absence of market transactions. Several producers maintain a stronger price stand and $17.50, valley, is less widespread than last week. Several makers are maintaining $18, valley, as minimum. One or two others may adopt this level before the week elapses.

Boston, June 22.—Brisk buying features the pig iron market. Prices dropped $1 during the week below the previous $20 Buffalo level. One lot of 400 tons and another of 1000 tons were placed at $19, Buffalo, or $23.91 delivered, and in some cases differentials have been shaded. New York state furnaces are quoting $23 to $24, delivered. Most Pennsylvania makers are reluctant to meet the other producing districts in New England. Foreign iron is less active at $19 to $21, Boston. The week's imports at Boston total 1500 tons.

Philadelphia, June 22.—Pig iron sales are confined largely to foundry grades. Improvement here is less noticeable than in some other districts. The National Radiator Co. still is negotiating for 2000 to 3000 tons for its Trenton, N. J. plant. The Westinghouse Electric & Mfg. Co. is inquirying for 300 tons for Attica, N. Y. The Pennsylvania railroad is in the market for 800 tons for Altoona, Pa. It is indicated that two large steelmakers will buy basic iron shortly.

Cleveland, June 22.—A continuation of heavy buying features the pig iron market. The past week, which was the third of the present movement, brought orders for around 75,000 tons additional to furnace interests with headquarters here. This makes approximately 225,000 tons placed with them in the three weeks, covering sales in Ohio, Michigan, Indiana, western Pennsylvania and western New York. Some of the companies, independently, estimate sales to date for the territory mentioned as 250,000 tons. In addition there is pending at present somewhat over 30,000 tons. It is evident that the buying movement is including quite generally pig iron for the last half; one leading company's sales show an even distribution between third and fourth quarter; another reports one-third of its sales are for last quarter. Individual tonnages closed during the past week were not large; few of them over 5000 tons. A Berea foundry finally closed for 5000 tons for the last half. Cleveland sales have not been large; it is estimated melters here have yet to buy 15,000 to 20,000 tons for third quarter, at their present basis of operations. A Muncie, Ind., melter is inquiring for 3000 tons. While quoted prices are the same as a week ago, namely $18 to $18.50, base, valley; $18 to $18.50, base, lake furnace, in competitive territory, and $19, base-Cleveland furnace, for local delivery, the tone of the market is firmer. The average price received by one furnace interest in the past week was higher than in the week preceding.

The Hanna Furnace Co. has not definitely decided the date for blowing out its Cherry Valley furnace at Leetonia, O., although it has planned to do so.

Buffalo, June 22.—Pig iron demand is holding up, although consumers are buying in smaller quantities than formerly. Considerable third quarter tonnage is finding its way on makers' books. Current inquiry is estimated at 12,000 to 15,000 tons. Sales indicate inquiry is being covered promptly, although in some instances partially. Twelve furnaces in the districts are in blast.

Cincinnati, June 22.—Impetus has been given the pig iron market in this district by the purchase of approximately 75,000 tons of basic iron by the Andrews Steel Co., Newport, Ky., for shipment over the balance of this year and into 1927. The business was placed with a nearby interest at a price which was not made public. The placing of the tonnage without inquiry has tended to bolster the market and as a result the $19 furnace price for northern iron has disappeared, and the market firmly established at $19.50, Ironton. The Lavelle Foundries, Anderson, Ind., is reported to have bought 600 tons of northern

(*Concluded on Page* 1659)

Pig Iron Prices

Prices per gross ton

Bessemer, valley	$19.00
Bessemer, Pittsburgh	20.76
Basic, valley	17.50 to 18.00
Basic, Pittsburgh	19.26 to 19.76
Basic, Buffalo	19.00
Basic, del., eastern Pa.	21.75 to 22.25
Malleable, valley	18.00 to 18.50
Malleable, Pittsburgh	19.76 to 20.26
Malleable, del., Cleveland	19.50
Malleabe, Chicago	21.00 to 21.50
Malleable, Buffalo	19.00 to 20.00
Malleable, del., eastern Pa.	22.00 to 23.00
No. IX, Eastern del., Phila.	23.26
No. IX, Buffalo	21.50
No. 1 foundry, Chicago	21.50 to 22.00
No. 2 foundry, valley	18.00 to 18.50
No. 2 foundry, Pittsburgh	19.76 to 20.26
No. 2 foundry, Buffalo	19.00 to 20.00
No. 2 foundry, Chicago	21.00 to 21.50
No. 2 foundry, Granite City	**22.00 to 22.50**
No. 2 foundry, Ironton furnace	19.00 to 19.50
No. 2 foundry, del., Cleveland	19.50
No. 2 foundry, del., Phila.	22.26
No. 2 foundry, N. J., tidewater	23.39
No. 2X, eastern del., Phila	22.76
No. 2X, east. N. J., tidewater	23.89
No. 2X, foundry, Buffalo furnace	20.50
No. 2X, eastern del., Boston	25.15 to 25.65
No. 2X, Buffalo, del., Boston	23.91 to 24.91
Continental foundry f.o.b. Boston	20.00 to 20.50
India, 2.25 to 2.75 silicon, delivered cars, Boston	21.00 to 22.00
No. 2 Alabama, Birmingham	21.00
No. 2 Alabama, Cincinnati	24.69
No. 2 Tenn., Birmingham	21.00
No. 2 Tenn., Cincinnati	24.69
No. 2 Alabama, Philadelphia	27.01
No. 2 Alabama, Chicago	27.01
No. 2 Alabama, Chicago (barge and rail)	26.18
No. 2 Alabama, Boston (rail and water)	27.91
No. 2 Alabama, Cleveland	27.01
No. 2 Alabama, St. Louis	25.42
No. 2X, Virginia, furnace	22.50 to 23.25
No. 2X, Virginia, Phila	27.67 to 28.42
No. 2X, Virginia, Jersey City	28.04 to 28.79
No. 2X, Virginia, Boston	28.42 to 29.17
Gray forge, eastern Pa.	21.75 to 22.25
Gray forge, val. del. Pitts.	19.26
Low phos., standard, valley	27.50
Low phos., standard, Phila	24.26
Low phos., Lebanon, furnace	23.00 to 24.00
*Low phos., English (nominal)	24.01 to 24.51
Charcoal, Birmingham	30.00
Charcoal, Superior, Chicago	29.04

Silvery iron Jackson county, Ohio furnace, 5 per cent $24.50; 6 per cent $25.50; 7 per cent $26.50; 8 per cent $27.50; 9 per cent $29.00; 10 per cent $31.00; 11 per cent $33.00; 12 per cent $35.00; 13 per cent $37.00; and 14 per cent $39.00.

Bessemer ferrosilicon, Jackson county, Ohio, furnace, 10 per cent $33.00; 11 per cent $35.00; 12 per cent $37.00; 13 per cent $39.00; 14 per cent $41.00; 15 per cent $44.00; 16 per cent $46.00; 17 per cent $48.50.

*Duty paid, delivered Philadelphia consumers.

The Market Section

Coke

Lower Prices Develop in Beehive Furnace Fuel Market—Buyers Expect to Close

LOWER prices have developed in the Connellsville furnace coke market, for spot and contract fuel. Spot prices dipped to $2.60 from $2.75 a week ago, and large buyers were able to get the contract price down, in some instances, to $2.85; other makers are holding for $3. Demand is not very active. The market for standard foundry coke still is quotable at $4 to $4.75.

Pittsburgh, June 22.—Another dip in spot prices of beehive coke is being used by large tonnage purchasers further to drive down contract quotations. Meager success is attending such efforts, some makers rigidly maintaining $3 minimum on extended shipments. Others are quoting $2.85 and $2.90. Spot prices this week dropped to $2.60, minimum, and $2.65 and $2.70 are more frequent on single carloads up to four or five at a time. One maker hitherto quoting $2.85 revised its spot figure to $2.75. A few blast furnaces in the market expect to close for third quarter or last half below $3. The only live prospects left include the Struthers Furnace Co. and Reliance Coke & Furnace Co. The Wheeling Steel Corp. will blow out its Top furnace and expects to put out additional ovens. The Shenango Furnace Co.'s present arrangement extends through the third quarter, as does that of the Sharpsville Furnace Co. The Jones & Laughlin Steel Corp. will not be a buyer for this period since its by-product capacity now is equal to consumptive needs. One or two eastern stacks may purchase small amounts from different sources. Additional foundry contracts are being renewed, usually with present sources of supply at various prices $4.75 down to $4. Spot prices occasionally are available at $3.75 minimum, that figure not always assuring much preparation. Premium brands are $5.50.

Production of coke in the Connellsville region for the week ended June 12 was 138,610 tons, against 141,990 tons the preceding week, according to the *Connellsville Courier*.

Cincinnati, June 22.—Shipments of by-product foundry and domestic coke continue in satisfactory volume. The Portsmouth By-Product Coke Co., is virtually sold up on the foundry grade for this month. Beehive foundry fuel also is moving in better volume since the molders' strike in Cincinnati has been virtually settled. Furnace coke offerings far exceed demand.

New York, June 22.—Spot demand for coke is small but steady. Beehive foundry fuel continues $4 to $4.25, Connellsville, depending on the brand.

St. Louis, June 22.—By-product manufacturers report a generally satisfactory trade, particularly in foundry coke. Contracting continues fairly active, with the total volume heavier than at the corresponding period last year and in 1924. Current sales have fallen off to some extent in response to decreased activities at some foundries and steel plants. Industrial demand is disappointing so far as new business is concerned, but shipments on old contracts are being well maintained. Prices are steady.

Birmingham, Ala., June 22.—Demand for coke is sufficient to warrant full operation of all by-product coke ovens in this district as well as a few of the beehive ovens. Quotations are firm at $5.50 to $6 for foundry fuel. Local demand shows no recession and considerable coke is being shipped out of the territory. Plans are under way for increased production.

Coke Prices

Beehive, Ovens

Prices per net ton

Connellsville furnace	$2.60 to 3.00
Connellsville foundry	3.75 to 4.75
New River foundry	6.50 to 7.00
New River furnace	4.50 to 5.00
Wise county furnace	3.25 to 3.50
Wise county foundry	4.25 to 5.50
Alabama foundry	5.50 to 6.50
Alabama furnace	5.50

By-Product

Foundry, Newark, N. J.; del.	$ 9.50 to 10.75
Foundry, Chicago, ovens	9.75
Foundry, New England, del.	12.00
Foundry, St. Louis	10.00
Foundry, Granite City, Ill.	10.00
Foundry, Birmingham	5.50 to 6.50
Foundry, Indianapolis, del.	10.75
Foundry, Ashland, Ky.	8.00
Foundry, Portsmouth, O.	7.50

Ferroalloys

More Spiegel Tonnage Contracted—Ferroalloy Shipments Are Good

New York, June 23.—Further heavy contracting of spiegeleisen was done by various consumers the past week. The majority of consumers have renewed contracts through the year. The tonnage involved in these purchases is about the same as that which was taken out during the first half. Prices are unchanged. Ferromanganese is quiet.

Special ferroalloys are unchanged except that ferrotungsten prices are heard slightly under $1 a pound contained in some instances. A sale of tungsten powder is reported at 95 cents a pound after a number of months in which little was done. Prices had been a little above $1. Tungsten ore is about $10.50 a short ton unit, duty paid, some prices being heard a little less, while asking prices usually run to about $10.75. Little business has been done but inquiry has improved slightly. Shipments of all ferroalloys are holding up well.

Pittsburgh, June 22.—Consumption of ferroalloys since the first of June apparently has increased somewhat, based on increased specifications particularly in ferromanganese. Practically no buying is being done. Open market quotations of $95 mean nothing, contracts being billed at $88 and $90. Shipments against 50 per cent ferrosilicon contracts taken at $85 delivered, are heavy. From time to time a carload or two of low grade ferrosilicon is bought at the full market prices. Additional contracts for spiegeleisen for last half have been closed, prices showing no change.

Chicago, June 22.—A fair amount of third and fourth quarter inquiry for spiegeleisen is appearing. The market is quoted at $34, domestic furnace, for carloads. Ferromanganese is unchanged at $88, seaboard, but most users have little last half business to cover.

Replaces Blast Furnaces

Birmingham, Ala., June 22.—Sloss-Sheffield Steel & Iron Co. has started work on two blast furnaces to replace its City No. 1 and No. 2 furnaces here. Excavations are completed and foundations now are being put in for the No. 2 furnace. With exception of blowing engines and other auxiliaries taken from present furnace, the unit will be modern and new. Output of furnace will be 400 tons daily against 265 tons of the present stack. No. 1 furnace will be built when No. 2 is completed. The present furnaces will be kept in operation until time for transferring machinery. Around $750,000 will be expended in the development. The Sloss-Sheffield company is relining its No. 4 furnace at North Birmingham and expects to have it back in operation by July 15.

General Aluminum Products Co., New York, has increased capital from from $10,000 to $50,000.

Ferroalloy Prices

†Ferromanganese 78 to 82 per cent, tidewater, or furnace first hand and resales	$88.00 to 110.00
Ferromanganese delivered Pittsburgh	92.79 to 114.79
Spiegeleisen 19 to 21 per cent domestic furnace or tidewater	32.00 to 34.00
Ferrosilicon, 50 per cent freight allowed	85.00 to 87.50
Ferrotungsten standard, per pound contained	1.00 to 1.05
Ferrochrome, 60 to 70 chromium, 6 to 8 carbon, cents per pound contained, delivered	11.00 to 11.50
Ferrovanadium, 30 to 40 per cent per pound estimated, according to analysis	3.25 to 4.00
Ferro-carbon-titanium, car lots, producer's plant, net ton	200.00
Ferrophosphorus, electrolytic, per ton, carload, 17 to 19 per cent, Rockdale, Tenn., basis (18 per cent material)	91.00
Ferrophosphorus, electrolytic, per ton, carload, 23 to 25 per cent, f.o.b. Anniston, Ala., (24 per cent materials)	122.50

†Duty paid.

Plates

Market Moderately Active—Price Steady at 1.90c, Pittsburgh

MODERATE activity is noted in the plate market. Specifications at Chicago during the week were below shipments, while with eastern mills they were about equal to the outgo. The market shows little deviation from 1.90c, Pittsburgh. A Brooklyn pipe line award involves 4000 tons; boilers and cars at Chicago 7000 tons, and barges and tanks at Pittsburgh 3000.

PLATE PRICES, PAGE 1644

Pittsburgh, June 22.—Mills are taking a firmer price stand on plates. No quotations now appear below 1.90c and some orders were taken the past week at that figure. Some are endeavoring to obtain 2.00c on smaller amounts, particularly on contracts. An additional lot of barges for a coal company takes 1800 tons and one lot of tanks for Texas requires 1200 tons. Some contracts only are being taken for two months instead of the entire quarter. The Humble Oil & Refining Co. is expected to buy considerable tankage for the Panhandle district, Texas.

Boston, June 22.—Plates are firm at 1.90c, Pittsburgh, and demand continues moderate. Tonnage placed to date this year is estimated ahead of last year. A bridge at Providence, R. I., will take 400 tons.

New York, June 22.—The Penstock Construction Co., Sharon, Pa., has booked the contract for 13,000 feet of 16-inch pipe line to be constructed in Brooklyn. The contract involves about 4000 tons of plates.

Philadelphia, June 22.—Plate demand is good. Some mills report that orders replaced shipments during the past week. Eastern mill operations average 40 to 60 per cent. The price 1.90c, Pittsburgh is firm, and some makers expect to advance shortly to 2.00c. The Pennsylvania railroad will will open bids June 28th on 15,000 tons of plates; 6000 tons of bars; 1000 tons of shapes; 500 tons of sheets; 100 tons of wire; also for a large quantity of axles, spikes, splice bars, and tie plates. The Norfolk & Western railroad is inquiring for 200 tons of plates, shapes and bars for third quarter. The Seaboard Air Line railroad is inquiring for its third quarter requirements of plates, shapes and bars.

Cleveland, June 22.—Plate orders in this territory continue to show a better run of miscellaneous business, with more instances of larger individual tonnages being sought indicating a greater faith of consumers in current prices. The latter now appear well stabilized at 1.90c, Pittsburgh or 2.09c, Cleveland. A number of sizable tonnages for pending work remain to be placed. Pittsburgh or Youngstown mills are expected to supply approximately 4000 tons to the Pennstock Construction Co., Sharon, for a Brooklyn waterline. The plates for the Illinois Central locomotives recently awarded to this territory still is unplaced. Four carfloats, three for the Wabash and one for the Ann Arbor still are pending.

Chicago, June 22.—Specifications for plates have not equaled shipments the past week largely because oil storage tankage has been absent. Boilermakers have been active, one platemaker having taken 4500 tons from this source. The leading interest will book 2500 tons of plates for the 500 Chicago & Northwestern railroad stock cars placed last week. Plates are quoted at 2.10c, Chicago, for tonnage and 2.20c for small business.

CONTRACTS PLACED

1800 tons, ten additional barges for Hillman Transportation Co., Pittsburgh; to the American Bridge Co.

1500 tons, pipe line for Tacoma, Wash., to Steel Tank & Pipe Co., who will supply electric welded pipe.

1200 tons, six 80,000 barrel tanks for an unidentified oil company in the Panhandle, Tex. district, to the Riter-Conley Co.

300 tons, three steel hull maneuver boats with derricks for the United States engineers, Louisville, Ky., to the Charles Hegewald Co., New Albany, Ind.

150 tons, water tank for the city of Mitchell, S. D., to the Pittsburgh-Des Moines Steel Co.

100 tons, Philbrook reservoir, Pitt river project, Pacific Gas & Electric Co., California, to Steel Tank & Pipe Co.

100 tons, pipe line, La Mesa irrigation district, La Mesa, Calif., to Lacy Mfg. Co.

CONTRACTS PENDING

3500 tons, towboats and barges for the Inland Waterways Corp., war department; bids open the middle of July.

500 tons, steel hull for concrete mixing plant, Mississippi river commission, Memphis, Tenn.; bids close July 9.

200 tons, penstock for Pacific Gas & Electric Co., San Francisco, for Pitt river project; bids being received.

Tonnage unstated, oil tankage for the Humble Oil & Refining Co. for a tank farm in the Panhandle district, Texas; formal inquiry expected soon.

Semifinished

Contracts Receive Attention, But Price Views Delay Closing —Inquiries Begin to Appear

SOME inquiries for slabs and billets ranging from 1000 to 3000 tons have come out. Contracts also are up for renewal. While more activity is apparent, the volume of business still is small. Leading makers are holding to their prices of $36 for sheet bars and $35 for billets and slabs. Wire rod contracts are being renewed on a basis of $45.

SEMFINISHED STEEL PRICES, PAGE 1644

Pittsburgh, June 22.—A number of slab and billet contract arrangements are up for renewal and while buyers claim ability to close at lower than $35, that is the figure generally quoted by the mills here. Several inquiries involve 1000 tons each; others between 2500 and 3000 tons. Some sheet bar specifications are overdue on second quarter contracts and until these come in buyers undoubtedly will defer action on third quarter arrangements. However, the $36 price is firmly held. Instructions have been issued to take third quarter contracts on wire rods at $45 and renewals will be coming along this week or next for a large aggregate tonnage to each of the producers. It is expected that customers will take tonnages comparing favorably with their second quarter consumption. Forging billet contracts are being renewed at $40 to $41. Skelp is inactive at 1.90c.

Philadelphia, June 22.—Billet consumers continue to buy from hand to mouth, showing no disposition to contract for third quarter. The week's business was small. Prices are unchanged.

Youngstown, June 22.—Placement of third quarter semifinished requirements continue to be delayed. Buyers are hoping to get a better price than applied on second quarter tonnages. Sheet bars and small billets are quoted at $36, Youngstown, and standard slabs and billets at $35, Youngstown.

Cleveland, June 22.—Efforts of consumers of sheet bars, billets and slabs to obtain lower prices than $36 on sheet bars and $35 on billets and slabs is tending to slow up the market, as makers continue to hold for these figures. Demand is not urgent enough to test the market immediately; some mills are carrying over a fairly large tonnage on their books from the second quarter.

Chicago, June 22.—It is reported, but not verified, that part of a tonnage of sheet bars which was offered last week to a western maker at less than $36, Chicago, has been placed. This maker claims $36 as its strict minimum. Small billets are quoted at $35, base, Chicago.

Iron and Steel Scrap Prices

Corrected to Tuesday noon. Gross Tons Delivered to Consumer

Steel Works Scrap

HEAVY MELTING STEEL

Birmingham	12.00 to 13.00
Boston (dealers)	10.00 to 10.50
Buffalo, No. 1	15.50 to 16.00
Buffalo, No. 2	14.50 to 15.00
Chicago	12.75 to 13.25
Cincinnati (dealers)	11.00 to 11.50
Cleveland, No. 1	13.50 to 14.00
Cleveland, No. 2	12.50 to 13.00
Detroit	12.00 to 12.50
Eastern Pennsylvania	15.00 to 15.50
Bethlehem delivery	14.50
New York (dealers)	9.75 to 10.25
Pittsburgh	16.00 to 16.50
St. Louis	12.00 to 12.50
Valleys, No. 1	16.00 to 16.25

COMPRESSED SHEETS

Buffalo	14.25 to 14.75
Chicago	10.50 to 11.00
Cleveland	13.00 to 13.50
Detroit	10.25 to 10.75
Pittsburgh	14.50 to 15.00
Valleys	14.50 to 15.00

BUNDLED SHEETS

Buffalo	10.00 to 10.50
Cincinnati (dealers)	7.00 to 7.50
Cleveland	11.00 to 11.50
Eastern Pennsylvania	13.00 to 13.50
Pittsburgh	13.50 to 14.00
St. Louis	7.50 to 8.00

SHEET CLIPPINGS, LOOSE

Chicago	7.75 to 8.25
Cincinnati	6.50 to 7.00
Detroit	6.50 to 7.00

STEEL RAILS, SHORT

Birmingham	13.00 to 14.00
Buffalo	16.00 to 16.50
Chicago	16.00 to 16.50
Cincinnati (dealers)	16.00 to 16.50
Cleveland (over 6 ft.)	14.50 to 15.00
Detroit	15.00 to 15.50
St. Louis	15.00 to 15.50

STOVE PLATE

Birmingham	14.00 to 14.50
Boston (consumers)	13.00 to 13.50
Buffalo	14.50 to 15.00
Chicago (net)	13.25 to 13.75
Cincinnati (dealers) (net)	7.50 to 8.00
Cleveland	13.00 to 13.50
Detroit (net tons)	12.50 to 13.00
Eastern Pennsylvania	13.50 to 14.00
New York (dealers)	9.50 to 10.50
Pittsburgh	12.50 to 13.00
St. Louis	14.00 to 14.50

LOW PHOSPHORUS

Buffalo, billet and bloom crops	17.50 to 18.00
Cincinnati (dealers)	15.50 to 16.00
Eastern Pennsylvania	19.00 to 20.00
Pitts. billet and bloom crops	20.00 to 20.50
Cleveland, billet and bloom crops	17.50 to 18.00

SHOVELING STEEL

Chicago	12.50 to 13.00
Pittsburgh	12.00 to 12.50
St. Louis	12.00 to 12.50

KNUCKLES, COUPLERS, SPRINGS

Chicago	15.25 to 15.75
Eastern Pennsylvania	17.50 to 18.00
Pittsburgh	18.00 to 18.50
St. Louis	13.50 to 14.00

FROGS, SWITCHES, GUARDS

Chicago	14.00 to 14.50
Eastern Pennsylvania	16.00 to 16.50
St. Louis	13.50 to 14.00

ANGLE BARS—STEEL

Buffalo	16.50 to 17.00
Chicago	14.50 to 15.00
St. Louis	13.00 to 13.50

Iron Mill Scrap

RAILROAD WROUGHT

Birmingham	$12.00 to 13.00
Boston (dealers)	13.00 to 13.50
Buffalo, No. 1	13.50 to 14.00
Buffalo, No. 2	13.00 to 13.50
Chicago, No. 1	12.75 to 13.25
Chicago, No. 2	12.75 to 13.00
Cincinnati, No. 1 (dealers)	8.00 to 8.50
Cleveland, No. 1	11.50 to 12.00
Eastern Pennsylvania	16.50 to 17.50
New York, No. 1 (dealers)	14.50 to 15.00
Pittsburgh, No. 1	11.50 to 12.00
Pittsburgh, No. 2	16.00 to 16.50
St. Louis, No. 1	11.00 to 11.50
St. Louis, No. 2	12.00 to 12.50

WROUGHT PIPE

Boston (dealers)	9.50 to 10.00
Eastern Pennsylvania	14.00 to 14.50
Buffalo	15.00 to 15.50
New York (dealers)	9.75 to 10.25

YARD WROUGHT

Boston	12.00 to 12.50
Eastern Pennsylvania	16.00

BUSHELING

Buffalo	14.00 to 14.50
Chicago, No. 1	10.75 to 11.25
Chicago, No. 2	8.25 to 8.75
Cincinnati, No. 1 (dealers)	8.00 to 8.50
Cleveland, No. 1	11.50 to 12.00
Cleveland, No. 2	11.00 to 11.25
Pittsburgh, No. 1	13.50 to 14.00
St. Louis, No. 1	10.50 to 11.00

MACHINE SHOP TURNINGS

Birmingham	7.50 to 8.00
Boston (chemical)	8.00 to 8.50
Buffalo	10.00 to 10.25
Chicago	7.75 to 8.25
Cincinnati (dealers)	6.50 to 7.00
Cleveland	10.00 to 10.50
Detroit	7.00 to 7.50
Eastern Pennsylvania	13.00 to 13.50
New York (dealers)	9.25 to 9.75
Pittsburgh	11.00 to 11.50
St. Louis	7.00 to 7.50

CAST IRON BORINGS

Birmingham (chemical)	15.50 to 16.50
Birmingham (plain)	7.50 to 8.00
Boston (chemical)	10.50 to 10.75
Boston (dealers)	8.00 to 8.50
Buffalo	11.75 to 12.25
Chicago	10.00 to 10.50
Cincinnati (dealers)	7.00 to 7.50
Cleveland	11.00 to 11.50
Detroit	8.00 to 8.50
Eastern Pennsylvania	13.50
Eastern Pennsylvania (chem.)	15.00 to 15.50
New York (dealers)	8.75 to 9.75
Pittsburgh	12.00 to 12.50
St. Louis	9.50 to 10.00
Valleys	12.50 to 13.00

MIXED BORINGS AND TURNINGS
For blast furnace use

Boston (dealers)	8.00 to 8.50
Buffalo	11.75 to 12.25
Cincinnati (dealers)	6.50 to 7.00
Cleveland	10.00 to 10.50
Detroit	8.00 to 8.50
Eastern Pennsylvania	12.50 to 13.00
New York (dealers)	9.25 to 9.75
Pittsburgh	12.00 to 12.50

PIPES AND FLUES

Chicago (net)	8.75 to 9.25
Cincinnati (dealers)	7.00 to 7.50
St. Louis	8.00 to 8.50

RAILROAD GRATE BARS

Buffalo	13.50 to 14.00
Chicago (net)	13.00 to 13.50
Cleveland	13.50 to 13.75
Eastern Pennsylvania	13.50 to 14.00
New York (dealers)	11.00 to 11.50
St. Louis	13.00 to 13.50

FORGE FLASHINGS

Boston (dealers)	8.75 to 9.00
Buffalo	12.00 to 12.50
Chicago	9.00 to 9.50
Cleveland (under 10 in.)	11.50 to 12.00
Cleveland (over 10 in.)	11.50 to 12.00
Detroit	8.25 to 8.75
Pittsburgh	12.00 to 12.50

FORGE SCRAP

Boston (dealers)	8.50 to 9.00
Chicago	16.25 to 16.75
Eastern Pennsylvania	13.50

ARCH BARS AND TRANSOMS

Chicago (net)	19.50 to 20.00
St. Louis	20.00 to 20.50

Iron Steel Works Scrap

AXLE TURNINGS

Boston (dealers)	8.50 to 9.00
Buffalo	13.50 to 14.00
Chicago	12.50 to 13.00
Cleveland	12.50 to 13.00
Eastern Pennsylvania	13.75 to 14.25
Pittsburgh	14.00 to 14.50
St. Louis	8.50 to 9.00

STEEL CAR AXLES

Birmingham	17.00 to 18.00
Boston (shipping point)	17.00 to 17.50
Buffalo	16.50 to 17.00
Chicago	19.25 to 19.75
Cleveland	16.00 to 16.50
Eastern Pennsylvania	22.00 to 23.00
Pittsburgh	20.00 to 20.50
St. Louis	18.50 to 19.00

SHAFTING

Boston (shipping point)	15.50 to 16.50
Chicago	19.50 to 20.00
Eastern Pennsylvania	20.00 to 21.00
New York (dealers)	17.50 to 18.00
St. Louis	16.00 to 16.50

Iron Foundry Scrap

CAR WHEELS

Birmingham, iron	$16.00 to 16.50
Boston (consumers)	17.00 to 17.50
Buffalo, iron	16.50 to 17.00
Buffalo, steel	17.00 to 17.50
Chicago, iron	15.50 to 16.00
Chicago, steel	15.75 to 16.25
Cincinnati	11.00 to 11.50
Eastern Pennsylvania	16.50 to 17.00
New York iron (dealers)	12.50 to 13.50
Pittsburgh, iron	16.50 to 17.00
Pittsburgh, steel	18.00 to 18.50
St. Louis, iron	15.50 to 16.00
St. Louis, steel	16.00 to 16.50

NO. 1 CAST SCRAP

Birmingham, cupola	16.50 to 17.00
Boston	18.00 to 18.50
Buffalo	15.75 to 16.25
Chicago, No. 1 machinery (net)	16.50 to 17.00
Chicago No. 1 railroad or agricultural (net)	15.75 to 16.25
Cincinnati No. 1 Machinery cupola (net tons dealers)	17.00 to 17.50
Cleveland, cupola	16.75 to 17.25
Detroit (net tons)	14.50 to 15.00
Eastern Pennsylvania, cupola	17.50 to 18.00
New York, cupola (dealers)	14.50 to 15.00
Pittsburgh, cupola	15.50 to 16.00
San Francisco, delivered	20.00 to 21.00
Seattle	16.50
St. Louis, railroad	15.50 to 16.00
St. Louis, agricultural	16.00 to 16.50
St. Louis, machinery	18.00 to 18.50
Valleys	17.50

HEAVY CAST

Boston	15.50 to 16.00
Buffalo (breakable)	14.00 to 14.50
Cleveland	13.00 to 13.25
Detroit (Automobile) (net tons)	19.50 to 20.50
Eastern Pennsylvania	16.50 to 17.00
New York (dealers)	13.50 to 14.00
Pittsburgh	14.00 to 14.50

MALLEABLE

Boston, railroad	18.50 to 19.00
Buffalo	16.50 to 17.00
Chicago, agricultural	15.00 to 15.50
Chicago, railroad	16.75 to 17.25
Cincinnati, railroad (dealers)	14.00 to 14.50
Cincinnati, agricultural (dealers)	13.50 to 14.00
Cleveland, agricultural	17.50 to 18.00
Cleveland, railroad	18.50 to 19.00
Detroit	14.00 to 14.50
Eastern Pennsylvania, railroad	16.00 to 16.50
Pittsburgh, railroad	16.00 to 16.50
St. Louis, agricultural	13.00 to 13.50
St. Louis, railroad	14.50 to 15.00

Miscellaneous Scrap

RAILS FOR ROLLING
5 feet and over

Birmingham	15.00 to 15.50
Boston (dealers)	11.50 to 12.00
Buffalo	17.00 to 17.50
Chicago	15.25 to 15.75
Cleveland	17.00 to 17.25
Eastern Pennsylvania	15.50 to 16.50
New York	13.75 to 14.25
Pittsburgh district	18.00 to 18.50
St. Louis	14.25 to 14.75

LOCOMOTIVE TIRES

Chicago, No. 1	17.25 to 17.75
Chicago, cut	16.75 to 17.25
St. Louis, No. 1	16.00 to 16.50

LOW PHOSPHORUS PUNCHINGS

Chicago	15.25 to 15.75
Eastern Pennsylvania	15.50 to 16.00
Pittsburgh	18.50 to 19.00

Scrap

Firmer Condition Appears and Some Prices Are Advanced—Buying Still Lagging

STRENGTH, apparently based more on sentiment than actual demand, has appeared in the iron and steel scrap market and advances in quotations have been made by dealers in asking prices. These are largely untested by actual sales. Dealers believe present strength foreshadows better buying by consumers for actual needs soon.

Chicago, June 22.—Asking prices of sellers rather than buying prices of consumers afford a gage of the iron and steel scrap market. This has resulted in marking up many grades 25 to 50 cents but there is no ring of conviction in these advances. Rather, they represent a rebound from the recent low and reflect a shortage of material that probably is more apparent than real. Dealers have realized higher prices in small sales of miscellaneous material, including cast, but there have been no substantial sales of the heavier grades for practically a month. Appraisals of heavy melting steel range from $12.75 to $13.50. A fair quotation today on heavy melting steel, on an asking price basis in the absence of actual sales, is $12.75 to $13.25, and other grades are in proportion.

Boston, June 22.—Speculative buying of iron and steel scrap has noticeably improved during the last few days and prices are firmer. The American Steel & Wire Co., Worcester, Mass., bought several hundred tons of steel scrap at $13.25 delivered.

New York, June 22.—Despite various trade predictions that scrap is likely to decline further, no important changes in prices are noted this week. In fact the market has been relatively steady now for a month. The Bethlehem Steel Corp. has closed on about 15,000 tons of railroad steel or the equivalent at $14.50, delivered, but this has not been reflected in dealers' buying prices.

Philadelphia, June 22.—Activity in iron and steel scrap is confined largely to dealer trading.

Buffalo, June 22.—There is a stronger undertone to scrap markets here although tonnage demand for most materials is lacking. The best open offer for heavy melting steel is about 50 cents under dealers' ideas of values and not much is moving except on contracts. Stove plate buying has been resumed at $15, an advance of 50 cents a ton.

Pittsburgh, June 22.—Scrap continues inactive. On a small lot of heavy melting steel wanted badly by the melter $16.75 was paid but the general market still is quotable at $16 to $16.50. Sales of steel specialties continue in small lots at $18 to $18.50 and axle turnings are up 50 cents to $14.50 to $15 on the strength of latest transactions.

Youngstown, O., June 22.—The scrap market in the Mahoning valley remains entirely untested by consumers. No sales of any consequence have been made to steelmakers in six weeks.

Cleveland, June 22.—While iron and steel scrap market sentiment is stronger, there is little trading to support it. Consumers still refrain from new buying and dealer activity is largely confined to attempts to smoke out business. Prices are unchanged from levels of a week ago.

Detroit, June 22.—No improvement is noted in demand for iron and steel scrap. Dealers continue inactive and tonnage continues in small quantities. Prices are unsteady although no change is noted.

Cincinnati, June 22.—Increased demand for iron and steel scrap in other districts has tended to stabilize the market here, but new buying still is small. Shipments on contracts continue to decline.

St. Louis, June 21.—Iron and steel scrap, as was the case a week ago, is entirely a dealers' proposition. There has been considerable bidding up of prices and buying by middlemen, their reasons being either to acquire tonnage for laying down in their yards, or to turn over at higher prices on quick sale.

Birmingham, Ala., June 21.—Dullness continues in the scrap market. With few exceptions quotations have been reduced 50 cents to $1 per ton. No. 1 cast is most active.

Sheets

Market Is More Active—Specifications Improved—Price Decline Believed Checked

A LARGER demand for sheets, particularly noticeable in eastern territory, has given a better tone to the market. Specifications also have improved, tractor and motorcar interests in the Middle West figuring in this. Mill interests believe the price decline has been checked. More orders have been placed in this country by British consumers.

SHEET PRICES, PAGE 1644

Youngstown, June 22.—Sheet specifications and the tonnages involved show a slight increase. Buyers apparently are awaiting evidence of price stabilization before participating in the third quarter market. They are permitting shipments to come along for the remainder of this month only. Orders of a hand-to-mouth character are engaging in excess of 80 per cent of hot mill capacity. The downward trend of prices seems to have been checked. Many producers are quoting No. 28 gage black at 3.15c although prices down to 3.00c where attractive specifications are involved still are apparent. Numerous orders for black but for meager tonnages, were entered by one producer during the week at 3.10c and 3.15c, base. Blue annealed still is quotable from 2.30c to 2.40c but the market shows some indications of tightening. Galvanized demand is lacking. The price range of 4.30c to 4.40c is unchanged. An optimistic tone is found in the eastern market and a better volume of placements are expected next quarter. High-grade sheet demand shows little gain. Only a few customers are taking out tonnage in an attractive volume. No large inquiry is before producers. One well known automobile maker now operating on a three-day surplus, is expected to make his third quarter requirement known soon. Full finished prices are unchanged at 4.20c.

Boston, June 22.—Sheet sales show no improvement and prices are soft. Buyers await developments and small mills are anxious for tonnage. Galvanized sheets are selling at 4.35c, Pittsburgh, and black sheets at 3.10c, Pittsburgh, or lower.

Philadelphia, June 22.—Sheet prices continue easy. Blue annealed are quotable at 2.30c to 2.40c, Pittsburgh; black 3.00c to 3.25c; galvanized 4.30c to 4.40c. Demand is replacing shipments, which for eastern mills average about 70 per cent of capacity.

Pittsburgh, June 22.—Occurrences in the sheet market have cause to feel encouraged. Specifications have increased, for rush shipment, and they have come from eastern sections. Additional orders have come from the West, particularly automotive tonnage, and this includes sheets for auto busses, taxicabs and tractors in addition to automobiles, for all of which an extremely large tonnage has been purchased. A flat price of 4.20c is now the quoted market on full finished sheets. Small orders are the rule in galvanized, many single carload specifications being noted for building trades and other users. Manufacturing lines are quiet. Some makers will not go below 4.30c. Blue

annealed sheet orders are widespread for diverse uses at 2.30c to 2.40c. It is a trifle easier to sell black sheets this week at 3.15c, although some lower levels still are encountered from small mills needing tonnage. This price situation is no worse than it has been, and gives signs of changing for the better. One large maker here increased its sheetmaking operations by 6 or 8 per cent last week. The general average is now nearer 65 than 60 per cent. Considerable sheet business is coming to this country because of the coal strike in England, and export prices are more favorable.

Buffalo, June 22.—Sheet sales have increased considerably during the past ten days. Unfilled tonnage now is the largest in months. Consumers have bought liberally for third quarter.

Chicago, June 22.—The trend in specifications for sheets, especially black and galvanized, continues moderately upward. Though continuing to keep their stocks at a minimum, many users have come into a period of seasonal consumption. The price situation is still such as to deter users from placing more than their current needs. At the same time makers are not anxious to load up their books with galvanized at 4.55c, Chicago, black at 3.35c and blue annealed at 2.55c. Official third quarter prices have not yet been announced. The leading independent sheetmakers has 23 hot mills engaged.

Cleveland, June 22.—Inquiries continue to show increased life in the local sheet market. Several 500 to 750-ton lots appeared during the past week. Some third quarter contracting is being done, but most buyers are closing only for immediate needs. An effort is being made to establish 3.15c Pittsburgh as the minimum on ordinary black sheets. Larger mills are holding to that price and smaller mills have stiffened some. On stock taking deep drawing or other extras, the market continues down to 3.05c. Less tonnage under 2.40c is heard on blue annealed as makers attempt to stabilize the price, and 2.30c has not disappeared. Autobody builders have been unable to break the market and 4.20c continues steady on that grade. Galvanized continues quotable at 4.20c to 4.40c, Pittsburgh.

Tin Plate

Demand Continues At High Rate—Operations At 80 Per Cent

TIN PLATE PRICES, PAGE 1644

Pittsburgh, June 22.—In view of weather conditions it is remarkable, in the opinion of important tin plate producers, the way tin plate demand keeps up. Possibly this is attributable to the sustained and apparently increasing demand for general line cans such as for paint, varnish, oil, grease, tobacco, groceries, and the many other products. Operations still are relatively high, averaging in the neighborhood of 80 per cent, and the price is unchanged at $5.50.

Strip Steel

Firm Stand Against Concessions Taken by Some Makers

STRIP PRICES, PAGE 1644

Pittsburgh, June 22.—One or two makers of cold rolled strip steel are maintaining a firm stand at a 3.75c minimum. Already many third quarter contracts have been taken on that basis, customers preferring their material and service to that obtainable elsewhere at lower figures. However, one or two producers had deemed it necessary to meet competition in the Dayton, O., and Rochester, N. Y., markets, as well as other sections, down to 3.60c. Hot strips are firm at 2.30c with 2.50c on narrow, and some contracts are being written for third quarter. Hot mill operations average 70 to 75 per cent; cold 50 to 60 per cent.

Youngstown, O., June 22.—Strip producers have heavier working schedules in hot mills than for many weeks. Prices on hot rolled material are being maintained at 2.30c for 6 inches and wider and 2.50c for narrower than 6 inches. Demand for cold rolled has eased off. Prices on this grade range from 3.60c to 3.75c.

Cleveland, June 22.—The strip market in this territory is unchanged, volume and price holding the levels of preceding weeks. Some increase in inquiry is noted but this is not reflected as yet in sales. Hot strip prices are firm at 2.50c on narrow and 2.30c on wide, base Pittsburgh. More talk of weakness in cold-finished strip is noted, although sellers in this territory claim 3.75c Pittsburgh the minimum on current business.

Pipe

Small Lot Buying Heavy and Mill Operations Continue High —Cast Demand Steady

LINE pipe inquiries are not active, although several are being contemplated. Small lot buying is sufficient to maintain mill operations at 85 to 100 per cent. Oil county jobbers are buying in better volume. Cast iron pipe demand is steady, no new large inquiries coming out. Cast pipe prices have weakened at Chicago following pig iron softness.

PIPE PRICES, PAGE 1644 AND 1676

Pittsburgh, June 22.—Total tonnage in buttweld pipe for a week is less than in lapweld because of the bulk of the latter, but the number of orders in each grade keep well abreast of each other. Standard full weight merchant pipe orders continue to come in to replace jobbers' stocks as these are depleted for building purposes.

Many oil country jobbers and oil well drillers direct are ordering in lots of 5 to 10 carloads at a time, the usual order being for one to three. Oil country demand is reflected also in an increased buying rate on seamless tubes. Large inquiries for line pipe are not identified but one or two are understood to be out. No new details are current regarding the Amarillo gas line into Denver and it now is believed certain this will not be placed.

District pipe mills continue to operate at 85 or 90 per cent, some being as near 100 per cent as they ever get. Spang, Chalfant & Co. Inc., Etna, Pa., started up its new 7-inch buttweld mill last week. The Youngstown Sheet & Tube Co. is operating its Zanesville, O., plant which had been down for several years. Prices are firm.

Competition still is keen in boiler tubes, locomotive tubes, mechanical tubing, etc. Orders have picked up this month as compared with May, which was better than the volume of business placed in April.

New York, June 22.—The local department of water supply, gas and electricity will open bids June 28 on 2200 tons of cast pipe and 200 to 300 tons of fittings. Aside from this, municipal demand is featureless, with private buying forming the bulwark of the market. Japan has ordered 850 tons of gas pipe from domestic makers.

Chicago, June 22.—Reflecting the softer condition of the pig iron market, cast iron pipe is quotable at $52.20 to $53.20, Chicago, for 4-inch, $48.20 to $49.20 for 6 to 24-inch and $45.20 for over 24-inch. In the northern markets new business about offsets shipments. On 12-inch and smaller some makers are oversold 70 to 80 days.

Birmingham, Ala., June 21.—Orders in hand and in sight will warrant active operation of cast iron pressure pipe plants here well into the third quarter. Demand is good. Production has been increased by the new centrifugal pipe shop of American Cast Iron Pipe Co. being completed. Quotations are steady at $40 per ton base on 6-inch and over pipe. No stock is being accumulated.

CONTRACTS PLACED

700 tons, Sullivan, Ill., to National Cast Iron Pipe Co.

130 tons, 4 to 18-inch class B pipe for Alhambra, Calif., to B. Nicoll & Co., who will furnish French material.

CONTRACTS PENDING

50,000 feet, 1½-inch galvanized iron pipe fittings, 33,000 feet 6-inch cast pipe for 100 pounds pressure and 6300 feet 8-inch pipe for 100 pounds pressure, Gulfport, Fla.; bids in July 6 by W. W. Swift Sr. clerk.

2400 to 2500 tons of 6, 8 and 12-inch cast iron pipe and fittings for the department of water supply, gas and electricity, New York; bids to be opened June 28.

293 tons, 12-inch class B and C pipe for Los Angeles, Spec. 795-C; bids in.

650 tons, 16-inch class C pipe and 40 tons of specials, Milwaukee; bids in June 29.

Bolts, Nuts, Rivets

Third Quarter Contracts Being Made at Unchanged Prices

NUT AND BOLT PRICES, PAGE 1644

Pittsburgh, June 22.—Third quarter contracts are being signed for nuts and bolts as well as rivets. The third quarter basis on nuts and bolts is unchanged from second quarter, the same discount applying. Some representative makers here are holding firmly to 2.60c on rivets; others go to 2.50c and one maker has gone still lower. A few rivet contracts also have been signed and every day carload orders are being received at 2.60c. Specifications are increasing this month over last. Operations are on a 75 per cent basis.

Philadelphia, June 22.—Specifications for bolts and nuts are only fair, because there has been no change in price for third quarter. Consumers generally are renewing contracts for third quarter.

Iron Ore

Commitments Expected To Be Increased—Inquiry for 100,000 Tons

Cleveland, June 22.—Several sales of small lots of Lake Superior iron ore were made during the week, and an inquiry came out from an independent merchant furnace interest for 100,000 tons. A better tone is noted in the market due to the pick up in the pig iron demand. At the beginning of the ore season it was known that a number of large consumers, principally steelworks interests, did not close for a full year's consumption of ore, and these are expected to increase their commitments. Consumption of ore increased slightly in May, as shown by the following statistics issued by the Lake Superior Iron Ore association.

	Tons
Ore consumed in April	5,191,619
Ore consumed in May	5,194,146
Increase in May	2,527
Ore consumed in May, 1925	4,357,491
Ore on Hand at furnaces June 1, 1926	13,063,435
Ore on Lake Erie docks June 1, 1926	4,323,944
Total at furnaces and Lake Erie docks June 1, 1926	17,387,379
Total at furnaces and Lake Erie docks June 1, 1925	21,049,160

Bars

Increased Activity Seen and Prices Are Firmer—Future Sales Limited by Some Mills

GREATER demand for steel bars is apparent than for other finished steel items, buying for third quarter being under way. At Pittsburgh some producers seek to limit sales to July and August. While 2.00c, Pittsburgh, is held on most business a premium is being asked for small lots. Requests for prompt shipment indicate small stocks in users' hands.

BAR PRICES, PAGE 1644

Chicago, June 22.—Soft steel bars, still lead other finished lines in activity, largely on account of continued buying for third quarter. New business booked by one maker in the first three weeks of June was 95 per cent over the similar period of May. Some users display a tendency to place bars for stock and carry heavier inventories. Specifications for bars the past week have exceeded shipments. Car building is the only basic industry that is sagging. Implement makers are expected to take heavy tonnages of bars next quarter. Consumption by automotive and accessory interests in this district has not declined perceptibly. Makers claim unusual firmness for 2.10c, Chicago, for sales of bars over 100 tons and 2.20c for sales of less than 100 tons, but some tonnage buyers are specifying requirements well through the third quarter at the former level.

Rail steel bars are unchanged at 1.90c to 2.00c, Chicago, and business continues seasonably good. The basis of the bar iron market continues at 2.00c, Chicago, with most makers on a part-time schedule.

Boston, June 22.—Leading mills are holding to 2.00c for third quarter delivery and sales below this level are exceptional. Spot tonnage sales improved during the week. Several mills are reluctant to quote for September delivery.

Philadelphia, June 22.—Iron bars are quiet at 1.85c to 1.90c, Pittsburgh.

Buffalo June 22.—Bar sellers have advanced prices on carloads and less to 2.365c, Buffalo. The former price of 2.265c can still be obtained on large lot business. Third quarter specifications are of fair proportions although sales since the advance have not been large.

Cleveland, June 22.—A substantial gain in new orders in shipments in steel bars in this territory is being maintained. With some sellers June tonnage will be among the best months of the year. Most buyers are covered on their requirements for the near future at 1.90c, Pittsburgh and are specifying on that basis. On smaller lots and for more distant delivery 2.00c Pittsburgh is named and a few orders have been taken on that basis. It is generally recognized, however, that the establishment of the 2.00c price still is a matter of future conditions.

Pittsburgh, June 22.—Increased activity is noted in merchant steel bars. Spot demand has grown, specifications against contracts are larger, and some third quarter contracts are being written. Some prominent makers are protecting customers for only two months, July and August. Sales are noted at 2.00c, for prompt and for future but an effort is being made to obtain 2.10c on lots less than 100 tons. Many orders are for rush shipment, indicating that stocks are low.

Refined iron bar demand is improving also but the majority of orders call for small lots. Prices start at 3.00c.

Cold Finished Steel

Specifications Better and Price Remains Firm at Former Level

Pittsburgh, June 22.—For the past month, particularly the last 10 days, specifications in cold finished bars have shown a decided improvement. This betterment is particularly marked over May, increases being 10 to 25 per cent. Some finishers are making contracts for third quarter at 2.50c which is firm. New York Central is inquiring for cold finished steel for third quarter.

Hoops and Bands

Demand Generally Good and Price Remains Firm

HOOP PRICES, PAGE 1644

Pittsburgh, June 22.—A few mills report a falling off in demand for hoop and band sizes of hot rolled flats; others who concentrate on narrow sizes report a sustained demand over a widespread area. Much of this business is coming from stamping companies and other consumers outside of strictly cooperage trades. Contracts are coming back daily signed for third quarter at 2.50c. Operations vary from 70 to 75 per cent.

Employment in Illinois in May dropped only one-half of 1 per cent from March, according to the Illinois department of labor. In the corresponding period of 1925 the loss was 2 per cent, and in 1924 almost 4 per cent.

Structural Shapes

Inquiries and Awards Continue Numerous —Chicago Building Takes 7200 Tons—More Mills Following Price Advance

AWARDS of structural steel continue numerous and involve a good tonnage. Inquiries also are plentiful although a large number are slow in materializing. The leading award this week is that of 7200 tons for the Bankers' building in Chicago. Railroad bridgework continues active, about 4000 tons being bought this week. Two large inquiries involve 5000 tons for an office in Chicago and 8000 tons for a New York office building.

More mills are following the recent $2 a ton price advance, although fabricators are fairly well contracted for third quarter needs at the previous level. Some fabricators are beginning to ask protections again. Low prices on material fabricated and erected are appearing again.

STRUCTURAL SHAPE PRICES, PAGE 1644

New York, June 22.—Although there are fewer large structural orders than a week ago, the volume of business is being maintained. Bridge work is still prominent, with the Pennsylvania particularly active. Following the recent price advances by some of the leading mills, shapes are tending upward, with the market on the general run of work between 1.90c to 2.00c Pittsburgh.

Philadelphia, June 22.—Structural shape prices have advanced generally the quotation on new business now being 1.90c Pittsburgh. While some of the mills name a 2.00c minimum with 2.10c on small business consumers generally are covered at lower prices prior to the advance. The real test of the new prices will not come until later. Lettings are fair with a large number of small jobs being placed.

Boston, June 22.—Structural sales continue in good volume with June running well ahead of May. Warehouse buying has been better during the week. Two mills are firm at 2.00c and it is only a large tonnage which will command a lower price.

Pittsburgh, June 22.—Structural steel orders are improving. Tonnages are growing and some fabricators are protecting themselves on at least a part of the tonnage they will require in the third quarter. Some mills are holding these commitments down to two months instead of three. Approximately 20,000 tons still is represented in work pending in this territory on which action has been deferred. Mill prices are firm at 1.90c to 2.00c, an effort being made to obtain the latter on material for future shipment. Competition still is lively on material fabricated and erected, one or two jobs developing a $60 per ton price last week.

Cleveland, June 22.—More activity in 100 to 150-ton lots of structural steel is noted. Small work continues numerous. Inquiries are more plentiful but still below the seasonal normal. Plain material prices are steadier at 2.00c, Pittsburgh although 1.90c protections still are carried forward.

Chicago, June 22.—Featuring structural awards is that of 7200 tons for the Bankers' building, Chicago, taken by the American Bridge Co. at a delivered price said to be under $70. The leading maker of beams has booked a total of 11,000 tons for various jobs. Although pending work sizes up satisfactorily, the trend is slightly downward and competition is exceedingly sharp. Beams are quoted at 2.10c, Chicago, for tonnage and 2.20c for small business.

Awards Compared

	Tons
Awards this week	39,631
Awards last week	28,757
Awards two weeks ago	35,787
Awards this week in 1925	45,384
Average weekly awards, May	38,357
Average weekly awards, 1926	28,804
Total awards to date, 1925	839,238
Total awards to date, 1926	730,930

CONTRACTS PLACED

7200 tons, Bankers' building, Chicago, to American Bridge Co. Starrett-Dilks Co., 160 North LaSalle street, Chicago, contractor.

3950 tons, numerous small jobs booked by three fabricators in the New York metropolitan district.

3785 tons, two projects in New York awarded as follows:
21-story hotel, to A. E. Norton Inc. through Geekie Naughton, general contractor.
St. Clair viaducts for the New York Central & Hudson River railroad, 137th to 139th street, to A. E. Norton Inc. through the Frederick Snare Corp.; this is for erection only.

3000 tons, power plant for the Ohio River Edison Co., Toronto, O., to the Jones & Laughlin Steel Corp.

2675 tons, bridge work for the Pennsylvania railroad, of which 1200 tons went to Bethlehem Steel Corp., 900 tons to the McClintic-Marshall Co. and 575 tons to the American Bridge Co., this latter project being in Indiana. These are in addition to awards of 3325 tons placed last week.

2000 tons, Loew's theater at Kansas City, Mo., to A. Goldberg & Sons Co.

1950 tons, Lake-State building, Chicago, to Gage Structural Steel Co.

1600 tons, gymnasium for the University of Pennsylvania, Philadelphia, to Shoemaker Bridge Co.

1400 tons, plant for Goodyear Tire & Rubber Co., Akron, O., at Cedartown, Ga., to Burger Iron Co.

1000 tons, school Nos. 52 and 73, Queens, New York, to Easton Structural Steel Co. and Bethlehem Fabricators, Inc.

1000 tons, office for the Brooklyn Edison Co., Pearl and Willoughby streets, Brooklyn, N. Y., to the Hedden Iron Construction Co.; as previously noted, this fabricator also booked 200 tons of foundation work for this project.

1000 tons, theater and office building for the Southern Enterprises, Jacksonville, Fla., to an unnamed fabricator.

1000 tons, 18-story office, 36-40 East Forty-ninth street, New York, to the Harris Structural Steel Co.

700 to 1000 tons, for Federal Cement Co. plant, Buffalo, to Lackawanna Steel Construction Co.

650 tons, building for the International Cement Corp., New Orleans, to the Lukens Steel Co.

600 tons, building for the West Penn Cement Co., Butler, Pa., to the Bollinger-Andrews Construction Co.

560 tons, Pearl street temple, Cleveland, to Massillon Bridge & Structural Co. previously announced awarded to Forest City Structural Steel Co.

506 tons, bridge across Pend d'Oreille river near Newport, Wash., for commissioners of public service, Sandpoint, Idaho, general contract to Sam Bondrye of Lewiston, Idaho. Steel to unnamed fabricator.

500 tons, Oliver Hazard Perry, Charles Dickens and William Rainey Hopper schools, Cleveland, to Cleveland Structural Steel Co.

500 tons, interstate bridge over Columbia river at Newport, Idaho, to Virginia Bridge & Iron Co.

450 tons, platform extensions for Chicago Rapid Transit Co., Chicago, to Hansell-Elcock Co.

440 tons, Abingdon Sanitary Mfg. Co., Abingdon, Ill., to Davenport Machine & Foundry Co.

400 tons, Textile Machine Co. building, Reading, Pa., to Lehigh Structural Steel Co.

375 tons, draw span near Tacoma, Wash., for Northern Pacific railroad, to Mt. Vernon Bridge Co.

300 tons, school in West New York, N. J., to the Oltmar Iron Works.

300 tons, Hadley Falls Trust building, Holyoke, Mass., to G. Haarman & Co., Inc.

275 tons, Baldwin Locomotive Works building, Eddystone, Pa., to McClintic-Marshall Co.

275 tons, highway bridge at Paines, Mich., to the American Bridge Co.

250 tons, masonic temple at Latrobe, Pa.; understood awarded the Lehigh Structural Co., Easton, Pa.

250 tons, plants for the Arnco Mills, Newman, Ga., through T. C. Thompson & Bros., Charlotte, N. C., to Southern Engineering Co., that city.

200 tons, school, Corning, N. J., to the Jones & Laughlin Steel Corp.

200 tons, knitting mills, Easton, Pa., to Bethlehem Fabricators, Inc.

200 tons, Colonial theater, Milwaukee, to Lakeside Bridge & Steel Co.

200 tons, extensions to plant of B. F. Perkins & Co., Willimansett, Mass., to G. Haarman & Co. Inc.

175 tons, high school, Gardner, Mass., to Stafford Iron Works.

150 tons, bakery for Pie Bakeries Co. of America, Chicago, to Hansell-Elcock Co.

150 tons, bridge at Sumner, Wash., for Northern Pacific railroad, to American Bridge Co.

130 tons, plant at Scottdale, Pa., for United States Cast Iron Pipe & Foundry Co., Burlington, N. J., to Massillon Bridge & Structural Co. through H. K. Ferguson Co., Cleveland, engineer.

125 tons, Y. M. C. A., Lockport, N. Y., to Leach Steel Corp.
120 tons, building for Oakland Scavengers' association, Oakland, Calif., to Judson Mfg. Co.
100 tons, liquid purifiers for Public Service Corp., Newark, N. J., to Pittsburgh Bridge & Iron Works.
100 tons, plant addition for Lever Bros., Cambridge, Mass., to Palmer Steel Co.
100 tons, Woodrow Wilson school, Oakland, Calif., to Judson Mfg. Co.
100 tons, bridge over Spokane river in Idaho, to Illinois Steel Bridge Co.
100 tons, bridge in Custer county, Idaho, to Vincennes Bridge Co.

CONTRACTS PENDING

15,000 tons, church, hotel and hospital for Realty Sureties Co., Broadway and 122nd street, New York; project abandoned.
8000 tons, Salmon Towers, West Forty-second street, New York; figures in.
5000 tons, Medical Arts building, Chicago; plans by D. H. Burnham & Co., 160 North LaSalle street, Chicago. Structural bids in.
5000 tons, Rowland & Clark theater and office building, Pittsburgh; building as projected may not be erected.
1700 tons, Scottish Rite temple, Oakland, Calif.; general contract to MacDonald & Kahn. Steel not yet placed.
1300 tons, 15-story office building for Alfred Mauck, West Fifty-seventh street, New York; pending.
1200 tons, Loew's theater, Pittsburgh; to be let this week.
1000 tons, crest gates for power development for the Susquehanna Power Co., Havre de Grace, Md.; bids asked.
1000 tons, Farnsworth building, Memphis, Tenn.; bids being taken.
1000 tons, Elks' club building, Memphis, Tenn.; bids being taken.
1000 tons, bridge, Providence, R. I.; bids close June 28.
900 tons, Mid-Hudson bridge, Poughkeepsie, N. Y.; bids being taken. Blakesle-Rollins Co., Boston, general contractors.
800 tons, free academy for the Newburgh township, Newburgh, N. Y.; bids asked.
600 tons, theater and office, Fifty-ninth street and Eighth avenue, New York; Thomas W. Lamb, architect.
500 tons, Auditorium hotel, Sixth street and St. Clair, Cleveland; George A. Ebeling architect; bids in June 24.
500 tons, apartment hotel, Atlantic City, N. J.; pending.
500 tons, bank and office building, Atlantic City, N. J.; pending.
300 tons, office building for the Berkshire Life Insurance Co., Pittsfield, Mass.; bids asked.
300 tons, building for East Liberty Bowling association, Pittsburgh; bids in.
300 tons, Y. M. C. A. building, Northside, Pittsburgh; Guibert Steel Co. low bidder.
300 tons, Horton memorial hospital, Middletown, N. Y.; bids asked.
300 tons, two bridges at West Englewood, N. J., for the New York Central railroad; pending.
219 tons, bridge for Louisiana highway commission; bids in July 15 by highway commission, Raymond building, Baton Rouge, La.
200 tons, buildings for Sisters of Notre Dame, South Euclid, O.; pending.
200 tons, restaurant for Horn & Hardart, Philadelphia; bids asked.
150 tons, Mack Motor garage, Brighton, Mass.; bids in.
150 tons, garage, Scranton, Pa.; pending.
150 tons, chapel, Brighton, Mass.; bids in.
150 tons, high school, Caribou, Me.; bids being taken.
130 tons, junior high school, Medford, Mass.; bids being taken.
85 to 100 tons, store and apartment building, Fifth avenue and Washington street, Steubenville, O.; H. K. Ferguson Co., Cleveland, engineer.
Several hundred tons, 11-story hotel, Albany, N. Y.; Kenneth Franvheim, Albany, architect.
Several hundred tons, third unit, Bamberger store, Newark, N. J.; actively contemplated. Jarvis Hunt, architect.
Tonnage unstated, dam No. 5, Allegheny river; Dravo Contracting Co. low bidder at $485,884.10.
Tonnage unstated, 240-foot bascule span for highway bridge between Superior, Wis. and Duluth, Minn. Bids in June 15 by Arrowhead bridge Co., 511 Woodland avenue, Duluth.

Concrete Bars

Pending Work Total Heavy More Large Awards Placed—Roadwork Again Active

CONCRETE inquiries continue to come out in good number and awards are heavier. Pending work in the Chicago and New England territories totals 5000 tons each. Roadwork again shows more activity with 2500 tons being bid in Pennsylvania and West Virginia. Prices continue unchanged at the 2.00c, Pittsburgh equivalent, with more firmness evident.

REINFORCING BAR PRICES, PAGE 1644

Chicago, June 22.—Pending work in reinforcing bars is becoming topheavy. A number of projects, requiring more than 5000 tons of bars, have seemed on the verge of being placed for ten days none have materialized. Billet reinforcing bars are quoted at 2.50c to 2.60c, Chicago, and rail steel 1.90c to 2.00c.

New York, June 22.—Concrete bar lettings have increased greatly, the advanced price forcing action. A 1.90c Pittsburgh price still is common on attractive tonnages for mill shipment but it is expected that July 1 will see the range 2.00c to 2.10c. Warehouse prices here are unchanged at 3.24c base delivered New York for lots under 2 tons. For larger lots 3.15c delivered is named and 2.50c base Youngstown for shipments out of Youngstown stocks.

Pittsburgh, June 22.—State highway road work features both concrete bar awards and inquiries this week. All other projects are small. Several hundred tons went to the Trucson Steel Co. and approximately 2500 tons are up in Harrisburg, Pa. and Charleston, W. Va., today. The 2.00c mill price is firm with some makers endeavoring to obtain 2.10c on small lots.

Cleveland, June 22.—Small lots constitute the only concrete bar activity Osborne Engineering Co. is designing the White Sox baseball park for Chicago which will take a large tonnage of concrete bars. Bids will be asked in July. Billet bars for July and August delivery have been advanced to 2.00c Pittsburgh where 1.90c had been prevailing. Rail steel is steady at 1.80c to 1.90c mill.

Awards Compared

	Tons
Awards this week	10,836
Awards last week	2,756
Awards two weeks ago	10,500
Awards this week in 1925	3,417
Average weekly awards, May	6,839
Average weekly awards, 1926	5,644
Total awards to date, 1925	165,225
Total awards to date, 1926	146,292

CONTRACTS PLACED

1300 tons, Sheridan Grace apartment, Chicago, to American System of Reinforcing.
1000 tons, building for New York Steam Co., New York, through Foundation Co., general contractor, to Jones & Laughlin Steel Corp.
1000 tons, hospital, University of Iowa, Iowa City, Iowa, to American System of Reinforcing.
850 tons, King Charlton building, New York, through Turner Construction Co., general contractor, to Jones & Laughlin Steel Corp.
800 tons, Montgomery, Ward & Co. addition, Oakland, Calif., to unnamed San Francisco jobber.
700 tons, Kenebec bridge, Bath, Me., through Foundation Co., general contractor, to Bancroft & Martin.
605 tons, Sunset tunnel, San Francisco, to unnamed San Francisco jobber.
500 tons, Wolf building, New York, through Industrial Engineering Co., general contractor, to McClintic-Marshall Co.
400 tons, Midwest Athletic club, Chicago, to Barton Spiderweb System.
400 tons, two schools for Chicago board of education, to Kalman Steel Co.
350 tons, roadwork for Pennsylvania, to Concrete Steel Co.
325 tons, Pennsylvania state highway road work, to the Truscon Steel Co., as follows: 125 tons through Elder & Merriman, Uniontown, Pa.; 100 tons through the Tri-state Engineering Co., Cumberland, Md. for Uniontown, Pa. district, and 100 tons through Joseph McCarthy & Co., for Mercer county.
250 tons, Baltimore & Ohio railroad warehouse, Philadelphia, to unstated fabricator through Penn Steel Service Co.
225 tons, University school, Milwaukee, to Concrete Steel Co.
175 tons, building on Otis street, San Francisco, to Badt-Falk & Co.
170 tons, Langdon avenue sewer, Philadelphia, to Baker Warehouse Co.
168 tons, bridge over Pend d'Oreille river, Idaho, to unnamed interest, general contract to Sam Bondrye of Lewiston, Idaho.
160 tons, seven bridges at Ambler and Cynwyd, Pa., to Davis Bros.
150 tons, Mayflower hotel, Boston, to Barker Steel Co.
150 tons, Brooklyn Union Gas Co., Williamsburg, New York, plant, to Igoe Bros.
145 tons, building for Standard Oil Co. of New Jersey, Philadelphia, to Concrete Steel Co.
140 tons, Jenkins Memorial building, Baltimore, to Kalman Steel Co.
135 tons, Briar Place apartment, Chicago, to Calumet Steel Co.
123 tons, Steinway & Sons plant, Long Island City, N. Y., to Igoe Bros.
110 tons, Roosevelt high school, New York, to Igoe Bros.
100 tons, including building for a Connellsville, Pa., dry-cleaning company and a building for the Y. M. C. A. Northside, Pittsburgh, through the Pittsburgh Engineering Co., to the Truscon Steel Co.
100 tons, Montifore home, Bedford Hills, N. Y., to Ferro Building Products Co.
100 tons, Cherman apartment, Chicago, to Inland Steel Co.
100 tons, Cook county roadwork, Illinois, to Calumet Steel Co.
100 tons, Blaine summer school, Peoria, Ill., to Concrete Engineering Co.

CONTRACTS PENDING

1250 tons, Pennsylvania state road work; bids closed at Harrisburg, Pa., June 22.
1250 tons, West Virginia state road work, about 50 miles; bids closed at Charleston, W. Va., June 22.
350 tons, addition to warehouse, reservoir, bins, etc., for the Owens Bottle Works, Huntington, W. Va.; bids being taken.

Rails, Cars

Rail and Track Accessory Buying Shows Gain—Equipment Inactive—Western Mills Busy

ACTIVITY of western roads in seeking rail and track accessory tonnage features the railroad market. Considerable track material is pending in Chicago territory. Norfolk & Western has placed 55,000 tons of rails and the Gary rail mill still is at capacity. Carbuilders again find dullness in the market. New York Central is seeking 20 locomotives.

RAILROAD TRACK MATERIAL PRICES, PAGE 1644

Chicago, June 22.—Southern Pacific railroad is inquiring for 5000 tons of tie plates, 13,000 kegs of spikes and 1000 kegs of bolts. Southern Pacific Equipment Co. is reported to have closed on 100 tons of bolts on the Pacific Coast. The Pennsylvania railroad is in the market for 3000 tons of tie plates, 5000 tons of angle bars, 8750 kegs of spikes and 2000 kegs of bolts. Western makers are now practically on the single price basis of $47, Chicago, for tie plates.

Southern railway has placed 10,000 tons of rails, with fastenings in proportion, with Tennessee Coal, Iron & Railroad Co. Rock Island railroad will not be in the market for rails for its Texas extension. The Gary rail mill continues to operate at capacity and has recently approached 18,500 tons weekly.

Western car builders look for satisfactory activity by the western roads in the last half year but no definite programs have as yet developed.

Boston, June 22.—German rails are arriving for the Boston & Maine railroad. Buying of miscellaneous material by New England roads continues fairly active and car repair and manufacturing shops in the district are busy.

New York, June 22.—Car buying is slack, with little noted in the way of fresh inquiry. Locomotive demand also has slowed up considerably, as compared with a fortnight ago. A list of 20 locomotives for the New York Central is the largest business in sight in this immediate district.

The largest rail award in this territory in weeks is the closing of 55,000 tons by the Norfolk & Western, 37,500 tons going to the Steel corporation and 17,500 tons to Bethlehem Steel Corp.

Philadelphia, June 22.—Wm. Wharton Jr. & Co. are low bidders on special track work in the Broad street subway between City hall and Olney avenue.

Pittsburgh, June 22.—Typical of the way orders for light rails are coming in, four orders were received from one company yesterday but the total was only 100 tons. This will make four minimum carloads.

Backlogs in track accessories are well dissipated. Prices usually are firm although some cutting occasionally is encountered in small spikes. These are quoted at 2.90c to 3.00c; standard spikes are held at 2.80c and tie plates at 2.35c.

ORDERS PLACED

New York, Westchester & Boston, 10 motor passenger cars, to the Pressed Steel Car Co.

Seaboard Air Line, 20 passenger coaches, to the American Car & Foundry Co. and 7 dining cars, to the Pullman Car & Mfg. Co.

Norfolk & Western, 250 flat cars, to its own shops.

Chicago, Milwaukee & St. Paul, 55 sleeping cars, to Pullman Car & Mfg. Co.

W. W. Boxley Son & Co., Roanoke, Va., eight air dump cars, to Koppel Industrial Car & Equipment Co.

J. V. Boxley & Co., Roanoke, Va., eight air dump cars, to Koppel Industrial Car & Equipment Co.

Fruit Growers Express, 400 underframes, to Ryan Car Co., 800 still to be placed.

Pullman Corp., 60 sleeping, club, lounge and similar cars, to own shops for use on the Chicago, Milwaukee & St. Paul railroad.

LOCOMOTIVE ORDERS PLACED

Akron, Canton & Youngstown, two locomotives, to Lima Locomotive Works, Inc.

ORDERS PENDING

Pennsylvania Coal Co., 150 mine cars; pending.

Seattle, 80 new light type, front and side entrance street cars, bids open July 30.

LOCOMOTIVE ORDERS PENDING

New York Central, 20 locomotives; contemplated.

Seaboard Air Line, several locomotives; contemplated.

Jacksonville Terminal, several locomotives; contemplated.

Algoma Steel Corp., Sault Ste. Marie, Ont., has received a large order for rails from the Canadian Pacific railway, and delivery has already been commenced. The company will supply the Hamilton Bridge Co. with material for construction on the new Welland Canal.

Mill Electrification Nears Completion

Chicago, June 22.—Inland Steel Co. is preparing to complete the electrification of its mills at Indiana Harbor, Ind., when operating conditions are propitious, possibly in September or October. Foundations are being put in so that the billet mill at the No. 1 plant, blooming mill, sheet bar enlarged power house is part of the mill, 24-inch bar mill and continuous with a minimum of stoppage. A mill can be converted to electric drive expansion program which included the new blast furnace, recently blown in. A naphtha plant may be added to the by-product coke department.

Wire

Shading in West Passes—Nails Lag But Wire Gains Impetus—Orders Increase

THIRD quarter tonnage of wire and nails is being taken at the same price as for second quarter. Shading in the West has ceased and prices are firmer. Mills generally are operating at unchanged rate. Wire is in better demand than nails. Summer demand usually brings increased tonnage and automotive needs are relied on to increase demand.

WIRE PRICES, PAGE 1644

Chicago, June 22.—Shading of 2.55c, Chicago or western mill, for plain wire and 2.70c for wire nails has disappeared, makers of wire and wire products contend, and these levels are firm. No announcement has been made concerning third quarter prices and makers are hopeful of more remunerative levels, but business they are now taking falls into this delivery. June bookings and specifications are said to be in excess of both May and last June. Automotive specifications are expected to expand as new models take form. July promises normal business in both jobbing and manufacturing lines, while August can usually be counted on as a good month. Western wire mill operations average 60 per cent.

Boston, June 22.—Wire demand has picked up a little at Boston due more to the appearance of two round tonnage contracts than to general buying. The price is unchanged at 2.65c Worcester or 2.875c Boston. Nails continue quiet with price unchanged at 2.65c Pittsburgh or 3.025c delivered.

Pittsburgh, June 22.—While nail demand has slowed considerably, wire demand is gathering impetus. Instructions have been issued to proceed against third quarter contracts, and the price for that period is unchanged at 2.50c. Jobbers are not turning over as many nails as ordinarily, notwithstanding widespread building programs. Ohio river nail makers afford some price competition but as a rule 2.65c base is maintained. Wire mill operations continue to average 50 to 60 per cent.

Nonferrous Metals

Buying Movement Subsides But Prices Are Fairly Steady in All Metals Though Less Strong—Confidence More General

Prices of the Week, Cents a Pound

	Copper Electro delivered	Copper Lake delivered	Copper Casting refinery	Spot Straits Tin, N. Y.	Lead New York	Lead East St. Louis	Zinc St. Louis	98-99% Aluminum	Spot Antimony	Ingot Nickel
June 16	14.00	14.10	13.50	61.25	8.35	8.12½	7.20	27.00	11.25	35.00
June 17	14.00	14.10	13.50	61.75	8.35	8.12½	7.17½	27.00	11.62½	35.00
June 18	14.00	14.10	13.50	61.62½	8.30	8.12½	7.10	27.00	11.87½	35.00
June 21	14.00	14.12½	13.50	61.25	8.27½	8.12½	7.12½	27.00	12.25	35.00
June 22	13.97½	14.12½	13.50	61.50	8.25	8.07½	7.10	27.00	13.00	35.00

NEW YORK, June 22.—Prices of nonferrous metals have changed little in the past week as buying subsided. Users apparently are better covered on nearby needs but in few cases have they ventured much beyond midsummer. However, confidence is a little more general and it is not quite so much a case of hand-to-mouth buying as a few weeks ago.

Copper—The red metal remains at 14.00c delivered Connecticut (⅛-cent more in Midwest) with light buying. Most producers are booked full for this month and well booked for July. Some metal has been bought for August but not a great deal. At times lately the export market has looked brighter, but much room is left for improvement. Mills in this country continue to operate at high rates, especially when the time of year is considered. This is particularly true in copper sheets and wire and seamless brass and copper tubing. Product prices are unchanged. The Copper Export Trading Co., association of producers in this country and Europe, probably will begin to function in about two weeks and this fact is having some influence for strength.

Zinc—Prime western receded from its quickly gained height of 7.25c East St. Louis, to 7.10c and 7.12½c as the current week opened. Smelters generally were firm for the latter figure but a lower bid might have been accepted. The depression occurred largely through second hands offering stocks down to take profits on purchases a few weeks back. Buying is light after there had been good sales, mostly for June shipment. The ore market is strong at $48 a ton.

Tin—The plating metal went up in the past week to the highest price in a number of weeks but with quiet markets it receded a little. Strength was based partly on expectation of a much tighter statistical showing for the end of this month, and partly a reaction from recent weakness with evidence that business in general was holding at a good level.

Lead—Buyers were unusually insistent a week ago, and the biggest business this year resulted, but since then they have become well covered on nearby needs and it became evident that it was not necessary to go far into the future for protection, so that the market has settled back to an orderly affair, with a firm undertone but premium prices disappearing while the market remained at a higher general level.

Installs Doubling Units

Youngstown, June 22.—Trumbull Steel Co. the largest independent tin plate roller in this district started the installation of mechanical doublers at its Warren plant this week. Six hot mills are idle to permit this improvement and other repairs to be made.

Will Add Modern Mixer

Pittsburgh, June 21.—A contract recently was received by the Pennsylanvia Engineering Works, New Castle, Pa., for a 1000-ton mixer from the Tennessee Coal Iron & Railroad Co., Birmingham, Ala.

Plate Mill Bid In

Warren Iron & Steel Co., Warren, O., which went into a receivership two years ago, has been bought in by bondholders committee at master commissioner's sale for $350,000. The property consists of a 24-inch sheared plate mill at Warren and coal properties in Kentucky.

Mill Products

Base prices cents per pound, f.o.b. mill

SHEETS	
High brass	18.87½
Copper, hot rolled	22.50
Zinc, (100-pound base)	11.25
Lead full sheets (cut ¼c more)	12.00 to 12.50
Aluminum, bright flat, up to 10 gage	37.50
SEAMLESS TUBES	
High brass	23.50
Copper	24.25
RODS	
High brass (round ⅝ to 2½-inch)	16.62½
Naval brass	19.37½
WIRE	
Copper, small lots	16.00
High brass	19.37½

Old Metals

Dealers' buying prices, cents per pound

HEAVY RED BRASS	
New York	8.75 to 9.00
Chicago	9.00
Cleveland	8.75 to 9.00
HEAVY YELLOW BRASS	
Chicago	7.50 to 7.75
Cleveland	7.00 to 7.25
ZINC	
New York	4.25
Cleveland	4.25 to 4.50
HEAVY COPPER AND WIRE	
New York	11.50 to 11.75
Chicago	10.50 to 11.00
Cleveland	10.50 to 10.75
RED BRASS BORINGS	
New York	8.25 to 8.50
YELLOW BRASS TUBING	
Cleveland	7.00 to 7.25
LIGHT COPPER	
New York	9.50 to 9.75
Chicago	9.25 to 9.50
Cleveland	9.25 to 9.50
LIGHT BRASS	
Chicago	7.00 to 7.25
Cleveland	6.00 to 6.25
ALUMINUM	
Clippings	20.00 to 21.00
Borings, Cleveland	12.00 to 13.00
Cast	17.00 to 18.00

Secondary Metals

Remelt aluminum No. 12	24.00 to 24.50
Brass ingot, 85-5-5-5	11.75

Coke By-Products

Distillate Prices Strong — Sulphate Market Quiet

New York, June 22.—Demand for light oil distillates is virtually keeping pace with production, with prices strong. Pure and 90 per cent benzols are holding 25 cents works in tanks and 30 cents in drums; solvent naphtha and toluol, 35 cents in tanks and 40 cents in drums; commercial xylol, 36 cents in tanks and 41 cents in drums.

Although quotations on sulphate of ammonia are holding at $2.50 to $2.55, port, in double bags for export and $2.50 to $2.55, delivered, for domestic account, these prices are purely nominal and undoubtedly subject to shading for attractive orders. Sellers look for little improvement before the first of next month, or when the fertilizer industry starts actively closing on its long term contracts.

Naphthalene prices at 6½ cents to 7 cents works for flakes and 7½ cents to 8 cents for balls, are also nominally unchanged, with trading listless.

Coke Oven By-Products

	Spot	Contract
Per Gallon at Producers' Plants in Tank Lots		
Pure benzol	$0.25	
90 per cent benzol	0.25	
Toluol	0.35	
Solvent naphtha	0.35	(nominal)
Commercial xylol	0.36	(nominal)
Phenol	0.22	0.22
Per Pound at Producers' Plants		
Naphthalene flakes	0.06½ to 0.07	
Naphthalene balls	0.07½ to 0.08	
Per 100 Pounds Delivered		
Sulphate of ammonia	2.52½	

Warehouse

Sales Continue in Fair Volume with June Equaling May—Prices Are Firm and Sheets Stiffen Slightly

TONNAGE going to iron and steel warehouses in June was close to the May level, the average being slightly above that month. Prices are steady with more firmness in sheets.

Demand is good at New York. May was the best month in the history of one large jobber and June is almost equal to the record.

Cincinnati jobbers report an increased volume of orders for structurals and reinforcing bars. Demand for sheets, cold-rolled products and plates continues to lag, although the Louisville & Nashville railroad is inquiring for 150 tons of sheets for prompt shipment. Prices are firm.

Jobbers at Philadelphia, following the recent mill weakness have made further reductions of $2 a ton on sheets. Business generally has dropped off, the present volume being considerably under the first two weeks of June.

Heavy demand is noted at Pittsburgh and from the present outlook June will exceed May in point of total tonnages shipped out of warehouse. Demand for hot and cold-rolled bars is particularly prominent.

A heavier volume of sales in June than May is expected by St. Louis warehouses. During the past two weeks there has been a fair movement of tank plates to the South, the tonnage being to fill in with on oil field jobs. Except in the case of reinforcing concrete bars, demand for building materials is less active.

Jobbers in the Chicago territory are doing a good business. Practically all lines have picked up about 5 per cent during the first half of June. Wire products are showing least gain.

No change is noted in demand at Detroit. While a number of automobile companies have curtailed production, other producers are continuing close to capacity operations, sustaining an unusually good demand.

Cleveland jobbers report bookings slightly above May, but below June 1925. Little increase in business is anticipated until fall by some. Strengthening of Pittsburgh warehouse quotations is reducing lost business in competitive territory. Prices are firm, with sheet quotations having stiffened somewhat.

Quotations in Cents Per Pound at Leading Market Centers

STEEL BARS

Boston	3.265c
Buffalo	3.30c
Chicago	3.00c
Cincinnati	3.30c
Cleveland	3.00c
Detroit	3.15c
Ft. Worth	3.90c
Los Angeles	3.20c
New York	3.24c
Philadelphia	3.00c to 3.20c
Pittsburgh	2.90c
Portland	3.00c
San Francisco	3.30c
Seattle	3.25c
St. Louis	3.15c
St. Paul	3.25c
Tulsa	4.06c

IRON BARS

Boston	3.265c
Buffalo	3.30c
Chicago	3.00c
Cincinnati	3.30c
Detroit	3.15c
Ft. Worth	3.90c
New York	3.24c
Philadelphia	3.00c to 3.20c
St. Louis	3.15c
Tulsa	4.06c

REINFORCING BARS

Boston	3.265c to 3.50c
Buffalo	3.30c
Chicago, billet	2.50c to 2.60c
Chicago, rail steel	1.90c to 2.00c
Cincinnati	3.30c
Cleveland	2.60c to 3.00c
Detroit	3.15c
Ft. Worth	3.75c
Los Angeles, C.L.	3.05c
Los Angeles, L. C. L.	3.30c
New York	2.95c to 3.15c
Philadelphia	3.15c
Pittsburgh	2.50c to 2.60c
San Francisco, C. L.	3.35c
San Francisco, L. C. L.	3.80c
Seattle	3.25c
St. Louis	3.15c
Tulsa	4.06c
Youngstown	2.50c to 2.60c

STANDARD STRUCTURAL SHAPES

Boston	3.365c
Buffalo	3.40c
Chicago	3.10c
Cincinnati	3.40c
Cleveland	3.00c
Detroit	3.25c
Ft. Worth	4.50c
Los Angeles	3.20c
New York	3.34c
Philadelphia	2.70c to 3.00c
Pittsburgh	3.00c
Portland	3.10c
San Francisco	3.30c
Seattle	3.35c
St. Louis	3.25c
St. Paul	3.35c
Tulsa	4.16c

PLATES

Boston	3.365c
Buffalo	3.40c
Chicago	3.10c
Cincinnati	3.40c
Cleveland, ¼-inch and thicker	3.00c
Cleveland, 3/16-inch	3.225c
Detroit	3.25c
Detroit, 3/16-inch	3.45c
Ft. Worth	4.50c
Los Angeles	3.20c
New York (sheared and universal)	3.34c
New York (floor)	5.25c
Philadelphia	2.75c to 3.00c
Philadelphia, 3/16-inch	2.85c to 3.15c
Pittsburgh	3.00c
Portland	3.25c
San Francisco	3.30c
Seattle	3.25c
St. Louis	3.25c
St. Paul	3.25c
Tulsa	4.16c

NO. 10 BLUE ANNEALED SHEETS

Boston 3/16-inch	3.915c
Buffalo	3.80c
Chicago	3.50c
Cincinnati	3.60c
Cleveland	3.15c
Detroit	3.65c
Los Angeles	3.75c
New York	3.89c
Portland	4.25c
Philadelphia	3.40c
San Francisco	3.75c
Seattle	4.25c
St. Louis	3.60c
St. Paul	3.75c
Tulsa	4.56c

NO 28 BLACK SHEETS

Boston	5.25c
Buffalo	4.45c
Chicago	4.10c
Cincinnati	4.55c
Cleveland	3.85c
Detroit	4.25c
Ft. Worth	5.50c
Los Angeles	4.75c
New York	4.35c to 4.50c
Philadelphia	4.35c
Portland	5.25c
San Francisco	4.75c
Seattle	5.25c
St. Louis	4.60c
St. Paul	4.35c
Tulsa	5.16c

NO. 28 GALVANIZED SHEETS

Boston	6.25c
Buffalo	5.60c
Chicago	5.25c
Cincinnati	5.65c
Cleveland	5.00c
Detroit	5.50c
Ft. Worth	6.25c
Los Angeles (corr. 28 ga.)	6.00c
New York	5.35c to 5.50c
Philadelphia	5.55c
Portland	6.25c
San Francisco	6.00c
Seattle	6.25c
St. Louis	5.70c
St. Paul	5.60c
Tulsa	6.31c

BANDS

Boston	4.015c
Buffalo	4.05c
Chicago	3.65c
Cincinnati	3.95c
Cleveland	3.65c
Detroit	3.80c
Ft. Worth	4.65c
Los Angeles	4.05c
New York	3.99c
Philadelphia	3.75c to 3.90c
Pittsburgh	3.60c
Portland	4.25c
San Francisco	4.15c
Seattle	4.25c
St. Paul	3.90c
Tulsa	4.71c

HOOPS

Boston	5.50c
Buffalo	4.05c
Chicago	4.15c
Cleveland	3.65c
Detroit	4.30c
New York	4.49c
Philadelphia	4.00c to 4.25c
Pittsburgh	3.60c
Seattle	5.00c
St. Paul	4.40c

COLD FINISHED STEEL

	Rounds and hexagons	Flats and squares
Boston	4.05c	4.55c
Buffalo	3.90c	4.45c
Chicago	3.60c	4.10c
Cincinnati	3.85c	4.35c
Cleveland	3.90c	4.40c
Detroit	3.85c	4.35c
Los Angeles	5.25c*	.....
New York	4.00c	4.50c
Philadelphia	4.00c	4.50c
Pittsburgh	3.60c	4.10c
Portland	5.00c*	.....
San Francisco	4.25c*	.....
Seattle	5.00c*	.....
St. Paul	3.85c	.....
Tulsa	4.66c	5.16c

*Rounds only.

COLD ROLLED STRIP

Boston, 0.100 inch, 500 lbs. lots	6.15 to 6.30c
Buffalo	6.35c
Chicago	6.25c
Cincinnati	7.15c
Cleveland, over 500 lb. lots	5.95c
Detroit	6.20c
New York	6.25c
Philadelphia	6.25c
Pittsburgh	6.30c

FOREIGN IRON AND STEEL

New York duty paid

Swedish, hollow drill steel	15.00c
Swedish iron bars round	6.75c
Flats and squares	7.00c

WELDED PIPE

Discounts from warehouse, New York City Standard Steel Pipe

WROUGHT STEEL PIPE

	Black	Galvanized
⅛-inch butt	—28	+21
¼ to ⅜-inch butt	—36	— 3
½-inch butt	—46	—29
¾-inch butt	—51	—37
1 to 3-inch butt	—53	—39
2-inch lap	—49	—22
2½ to 6-inch lap	—48	—35
7 and 8-inch lap	—44	—17
9 and 10-inch lap	—38	—14
11 and 12-inch lap	—37	—12

WROUGHT IRON PIPE

	Black	Galvanized
⅛ to ⅜-inch butt	+44%	+78%
½-inch butt	— 4	+19
¾-inch butt	—1	+ 9
1 to 1½-inch butt	—14	+ 6
2-inch lap	— 5	+14
2½-inch lap	— 9	+ 6
3 to 6-inch lap	— 3	+ 6
7 to 12-inch lap	— 3	+16

Coast Buys Small Lots

Strike Continues To Hold Up Building at San Francisco—
Prices Firmer but No Large Lots Offer

SAN FRANCISCO, June 19.—(*By Air Mail*)—Trading in iron and steel products in the Coast markets this week has been confined, with few exceptions, to small, spot lots. Among awards was 2000 tons for an apartment in Beverly Hills, Calif., 1700 tons of plates for a pipe line at Tacoma, Wash., and 800 tons of concrete bars for the Montgomery Ward & Co. addition in Oakland. Little improvement is noted in the carpenters' strike situation in the Bay district. Prices are becoming more firm and less tendency to shade the prevailing levels is noted. Some plate mills have advanced prices this week by $1 a ton.

Pig Iron and Coke

The only sale of importance reported this week for pig iron and coke involved 500 net tons of foundry coke for the Southern Pacific Co. Dealers and importers report one of the quietest periods in months. Prices remain unchanged from those quoted last week.

Coast Pig Iron Prices

Utah basic	$26.00 to 27.00
Utah foundry	26.00 to 27.00
*English (2.75 to 3.25 sil.)	25.00
*German	23.50
*Belgian	22.00
*Indian	25.00
*Dutch	22.00

*C.i.f. duty paid.

Bars, Plate and Shapes

Concrete bar awards this week aggregated over 1700 tons and included 800 tons for the Montgomery Ward & Co. addition in Oakland and 605 tons for the Sunset tunnel in San Francisco, both taken by an unnamed San Francisco bar jobber, 175 tons for a building on Otis street, San Francisco, placed with Badt-Falk & Co. and 163 tons for a bridge over the Pend d'Orielle river in Idaho, placed with an unknown interest. Pending business is of fair proportions but until the strike is settled in San Francisco, it appears likely that little of the tonnage in this district will be placed. Demand for merchant bar material is considered only fair and practically all orders involve small lots of various sizes.

The Steel Tank & Pipe Co., Berkeley, Calif., was awarded the Tacoma pipe line project involving about 1500 tons of plates. This pipe line will be constructed along the same general specifications as the East Bay municipal utility district pipe line at Oakland, which involved about 75,000 tons of plates and which was awarded to the same company. Other awards consist of 100 tons for a reservoir for the Pacific Gas & Electric Co.'s Pitt river project, placed with the Steel Tank & Pipe Co., and 100 tons for a pipe line at La Mesa, Calif., booked by the Lacy Mfg. Co. The only new inquiry of the week calls for 200 tons for a penstock for the Pacific Gas & Electric Co. on the Pitt river project, bids on which are now being received. Pending business totals over 6000 tons. Bids will be opened next week on 1500 tons for a pipe line at La Mesa, Calif.

Testing Materials

Society Opens Annual Convention at Atlantic City—Officers Elected

Atlantic City, June 22.—Many new and important features in the manufacture, testing and application of iron and steel products are covered in the schedule of papers and reports for the twenty-ninth annual meeting of the American Society for Testing Materials which opened its meeting here today. Of the 13 sessions which are scheduled six will be devoted to the discussion of metals and their service as basic materials in industry.

The opening meeting, held at 2 p. m., considered the reports of the committees on wrought iron, cast iron and malleable castings. An important feature was a study of the relation between the properties of cast iron pipe tested under impact, internal pressure and flexure. This paper, prepared by A. N. Talbot and F. E. Richert, University of Illinois, Urbana, Ill., made comparisons of these properties between cast iron pipe made by the various methods of sand casting, centrifugal casting and a more recent type of manufacture which has been termed as sand spun. The latter consists of introducing molten metal into a mold made of refractory material, the mold being rotated on its longitudinal axis and the centrifugal action producing the pipe without the need of a central sand core.

James T. MacKenzie, American Cast Iron Pipe Co., Birmingham, prepared a discussion on the relation between the proposed standard test bar for cast iron and two bars which heretofore have been considered standard.

The announcement of the election of officers, which is accomplished by letter ballot, was read by C. L. Warwick, secretary. Those elected were as follows: President, J. H. Gibboney, chief chemist, Norfolk & Western Railway Co., Roanoke, Va.; vice president, G. W. Thompson, chief chemist, National Lead Co., Brooklyn, N. Y.; members of executive committee, Cloyd M. Chapman, consulting engineer, New York; W. F. Edwards, director of research, United States Testing Co. Inc., New York; W. B. Price, chief chemist and metallurgist, Scovill Mfg. Co., Waterbury, Conn.; and H. T. Shelley, secretary and manager, Eastern Clay Products association, Philadelphia.

E. W. Oglebay, Founder of Ore Firm, Dead

Earl W. Oglebay, founder of Oglebay, Norton & Co., one of the leading Lake Superior iron ore interests with headquarters in Cleveland, died at his residence in that city June 22, aged 77 years.

Mr. Oglebay was a director of the company, his nephew, Crispin Oglebay, representing his interests, being the president. He also was a director of the Republic Iron & Steel Co., a director of the Wheeling Steel Corp., president of the Montreal Mining Co., a Lake Superior iron ore company associated with Oglebay, Norton & Co., and vice president and director of the Kelley Island Lime & Transportation Co. He also had extensive interests in various Great Lakes steamship companies, and in various manufacturing concerns. He was chairman of the trust committee of the Cenaral National bank, Cleveland. At the age of 28 he was elected president of the National bank of West Virginia, at Wheeling, and held that office up to the time of his death. He was a member of many business and social organizations.

Mr. Oglebay was born in Bridgeport, O., was educated at Harding's Academy, Wheeling; Kenwood school, New Brighton, Pa., and Bethany college, Bethany, Pa. He went to Cleveland in 1884 and became a member of the firm of Tuttle-Oglebay Co. The present firm was established three years later. It was a partnership up to the time of a reorganization as a corporation in 1924, and the election of his nephew as president.

Mr. Oglebay retired from active participation in the affairs of the company, and devoted most of his time to farm experimentation at his large property in Wheeling, W. Va.

British Iron Supplies Dwindling

High Cost of Inland Transportation Prevents Larger Importations—Only Two Furnaces in Scotland Operating—Steel Contracts Numerous—Egypt Buys Twenty Locomotives in Belgium

2-3 Caxton House, Westminster, S. W.1
European Headquarters,
IRON TRADE REVIEW.

LONDON, June 22.—(*By Radio*)—The British coal strike is dragging along, with no settlement in immediate prospect. Pig iron supplies are rapidly becoming exhausted, except for hematite. Two additional furnaces in Scotland have been blown out, leaving only two active there. Foreign pig iron is being purchased by British melters, although the tonnage is small owing to inland transportation costs.

Inquiries and contracts for structural steel are numerous. The Barrow works of Vickers Ltd., is operating on large armament orders. Purchasing of galvanized sheets continues active. The market for black sheets and tin plate, however, is dull.

French domestic iron and steel prices are strengthening. Steel exports are more active, but prices are easier. The Belgian market is unstable due to exchange fluctuations. An order for 20 locomotives has been split equally between Societe John Cockerill and Haine St. Pierre works.

British Steel Mills Doing Well Under Strike

Office of IRON TRADE REVIEW,
Prince's Chambers, Corporation St.

BIRMINGHAM, Eng., June 11.—Pig iron is gradually succumbing to slow strangulation, one furnace after another going out of action. Scotland is surviving longest, having still four or five furnaces at work. Middlesbrough has two owned by Bolckow Vaughan, and Durham two, belonging to Consett. The former are on slack blast. One or two are understood to be at work in South Wales. With these exceptions, the furnaces are idle.

Rolling operations are probably continuing on a larger scale than in a previous strike. So many mills use electric power, with producer gas for heating that they are less dependent upon raw fuel than on any previous occasion, and in every district a number of mills are at work. As nearly all now operate on the three-shift system considerable steel is being turned out, although an increasing proportion is rolled from foreign steel.

Sterling—$4.86

Probably a more important factor is the new business now being placed or in prospect. It is likely that the railways may, owing to their loss of revenue, be obliged to curtail their renewal programs, but the placing of 13,000 tons of steel rails by the London & North Eastern Railway Co. is a useful piece of evidence in the other direction. These orders are divided between Bolckow Vaughan & Co., Ltd., Middlesbrough, Pease & Partners Ltd., Saltburn, the Cargo Fleet Iron Co., Ltd., Middlesbrough, the Barrow Hematite Steel Co., Barrow and Steel, Peach & Tozer Ltd., Sheffield. An additional order from the same company is 4400 pairs of wagon wheels and axles, which, although no names are mentioned, have probably found their way to various Sheffield firms. Various Barrow companies have additional orders for railway material, some of which have been placed by India. The Bombay Baroda & Central India railway are inviting tenders for track supplies.

On the other side of the account
(*Concluded on Page* 1668)

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, June 21	*British* Gross Tons U. K. Ports		*French* Metric Tons Channel Ports		*Belgium and Luxemburg* Metric Tons Channel Ports		*German* Metric Tons Rotterdam or North Sea Port	
Export Prices f. o. b. Ship at Port of Dispatch—By Cable		£ s d		£ s d		£ s d		£ s d
PIG IRON								
Foundry No. 3, Silicon 2.50-3.00	$18.51	3 16 0*	$16.31	3 7 0	$16.31	3 7 0	$17.53	3 12 0
Basic	18.26	3 15 0	16.92	3 9 6	16.92	3 9 6	17.05	3 10 0
Basic-bessemer	19.11	3 18 6†	14.00	2 17 6	14.00	2 17 6	18.26	3 15 0
Hematite, Phosphorus 0.02-0.05	19.97	4 2 0	19.09	665*	.....	....	20.70	4 5 0
SEMIFINISHED STEEL								
Billets	$27.29	5 12 6	$20.70	4 5 0	$20.70	4 5 0	$20.70	4 5 0
Wire rods	43.83	9 0 0	25.81	5 6 0	25.81	5 6 0	27.03	5 11 0
FINISHED STEEL								
Standard rails	$35.31	7 5 0	$29.22	6 0 0	$29.22	6 0 0	$29.22	6 0 0
Merchant bars	1.49c	6 17 6	1.05c	4 15 0	1.05c	4 15 0	1.05c	4 15 0
Structural shapes	1.38c	6 7 6	1.01c	4 12 0	1.01c	4 12 0	1.07c	4 17 0
Plates, ship, bridge and tank	1.41c	6 10 0	1.10c	5 0 0	1.10c	5 0 0	1.16c	5 5 0
Sheets, black, 24 gage	2.23c	10 5 0	2.04c	9 5 0	2.04c	9 5 0	2.42c	11 0 0
Sheets, galvanized, 24 gage, corrugated	3.48c	16 0 0	3.12c	2,400*	3.78c	3,100*	3.63c	16 10 0
Bands and strips	2.17c	10 0 0	1.30c	1,000*	1.35c	6 2 6	1.43c	6 10 0
Plain wire, base	2.12c	9 15 0	1.32c	6 0 0	1.32c	6 0 0	1.51c	6 17 0
Galvanized wire, base	2.77c	12 15 0	1.76c	8 0 0	1.76c	8 0 0	1.98c	9 0 0
Wire nails, base	2.07c	9 10 0	1.71c	7 15 0	1.71c	7 15 0	1.76c	8 0 0
Tin plate, base box 108 pounds	$ 4.99	1 0 6	.....	....	....	....	$ 6.82	1 8 0

*Francs

Domestic Prices at Works or Furnace—Last Reported			Francs		Francs		Marks	
Foundry No. 3 Pig Iron, Silicon 2.50—3.00	$17.65	3 12 6	$13.77	480(2)	$14.45	500	$19.55	85
Basic pig iron	17.65	3 12 6	13.20	460(1)	14.16	490	20.24	88
Furnace coke	5.36	1 2 0	4.85	169	4.48	155	4.95	21.50
Billets	27.39	5 12 6	17.79	620	18.97	655	27.37	119
Standard rails	1.63c	7 10 0	0.93c	720	0.82c	670	1.46c	140
Merchant bars	0.58c	7 5 0	1.06c	815	0.91c	750	1.46c	140
Shapes	1.52c	7 0 0	0.93c	715	0.88c	725	1.42c	136
Plates, ship, bridge and tank	1.55c	7 2 6	1.09c	845	0.95c	780	1.60c	153
Sheets, black, 24 gage	2.28c	10 10 0	1.91c	1475	1.43c	1175	2.19c	210
Sheets, galvanized 24 gage, corrugated	3.42c	16 0 0	2.66c	2050	2.96c	2425	3.96c	380
Plain wire	2.12c	9 15 0	1.67c	1280	1.40c	1150	1.88c	180
Bands and Strips	2.28c	10 10 0	1.28c	985	1.18c	970	1.67c	160

*Middlesbrough; †Scotch foundry iron; (1) Basic-bessemer; (2) Longwy. British export furnace coke £1 2s 0d ($5.36) f. o. b. Ferromanganese £14 10s 0d ($70.62) f. o. b. German ferromanganese £12 0s 0d ($58.44) f. o. b.

The equivalent prices in American currency are in dollars per ton for pig iron, coke, semi-finished steel and rails; finished steel is quoted in cents per pound and tin plate in dollars per box. British quotations are for basic open-hearth steel; French Belgian Luxemburg, and German are for basic-bessemer steel.

Rate Complaint

Involves Pig Iron Shipments in Northern Ohio

While northern Ohio railroads have been trying to advance the rates on pig iron into Canton, O., from various producing districts, the Trumbull-Cliffs Furnace Co., Warren, O., has filed with the Ohio public utilities commission a petition for a reduction of the $1.76 rate from Warren to Canton. The company cites in its complaint that the distance from Warren to Canton is 51 miles, while a rate of $1.26 is in effect from Leetonia to Canton, 38 miles; from Niles to Canton, 46 miles; from Girard, 51 miles; from Youngstown, 55 miles; from Struthers, 61 miles, and from Cleveland, 73 miles. The company wants the same rate from Warren as from these other cities.

The case does not involve the rate controversies that arose when northern Ohio railroads last winter reduced the rates from Toledo and other northern Ohio points to southern Ohio territory, the subsequent reduction by southern Ohio lines into Indiana and competitive territory, and finally the request by the northern Ohio railroads to suspend the reduction, pending a general reconstruction of those rates.

In November, 1925, railroads that now are interested in the Warren-Canton case petitioned the interstate commerce commission to increase the so-called "key" rates from the cities mentioned to Canton. The rate from Warren of $1.76 was cited as an indication that there was an unbalanced rate situation. About two months ago representatives of the railroads decided to ask for a general increase from the cities named to Canton from $1.26 to about $1.65. All of the furnace companies shipping from the points named are interested in this case, still pending, and the Trumbull-Cliffs petition affects them indirectly, as tending to bring the controversy to a focus.

If the railroads succeed in lifting the "key" rate, instead of reducing the rate from Warren to Canton in line with the others, rates on finished material in the same districts may be raised subsequently.

In its petition, the Trumbull-Cliffs touches on this feature by saying: "The defendant, Pennsylvania railroad, publishes a rate on sheets and tin plate bars and slabs from Warren to Canton which is lower than the rate on pig iron from Warren to Canton; that pig iron is the crude material of these articles, that these articles are more valuable and are usually accorded billet rates, which are higher than the rates on pig iron."

May Sheet Output Lowest Since Last July

Pittsburgh, June 23.—Total sheet sales for every month since last June exceeded those of May, with the exception of February of this year. The May tonnage this year, 201,743 tons, compares with 186,538 tons sold in May 1925. The May figure dropped 48,123 tons from April and was about one-half as large as the record-breaking month last October. Production in May decreased 30,270 tons from April, and was the smallest monthly production total since last July. Shipments declined 21,460 tons from the April tonnage, May being the smallest shipping month since last September. These data are compiled and issued by the National Association of Sheet and Tin Plate Manufacturers. Further comparisons follow:

	Net tons May 1926	Per cent of capacity	Net tons Apr. 1926	Per cent of capacity
Total sales for month	201,743	64.3	249,866	77.1
Total production	264,541	84.3	294,811	91.0
Total shipments	267,299	85.1	288,759	89.1
Unfilled tonnage as of June 1 and May 1	418,582	133.4	472,448	145.7
Finished stock on hand awaiting shipment	120,036	38.2	121,685	37.5
In stock, unsold	58,503	18.6	62,604	19.3

The total number of hot mills in the United States is 710, having a capacity for May 1926 of approximately 420,300 net tons, and the percentage of the capacity to which the figures shown above are related is 74.8.

Pig Iron Sales Continue

(*Concluded from Page* 1645)

foundry for last half delivery and the tonnage being divided between three selling agencies. B. F. Avery Co., Louisville, Ky., closed on its inquiry for 600 tons of the same grade. Inquiry pending aggregates several thousand tons, the largest being 3000 tons of malleable iron for the Muncie Malleable Co., Muncie, Ind. The southern iron situation is unchanged, with the leading producers, quoting $22 Birmingham for prompt shipment and $21 for third quarter.

Chicago, June 22.—A good size buying movement in northern pig iron is under way. Probably 60,000 tons for July-August and third quarter delivery has been closed, while inquiry for 20,000 to 30,000 tons is active. Most inquiries develop into contracts speedily. Melters generally appear to feel that at $21 to $21.50, Chicago furnaces, for No. 2 foundry and malleable the market is at bottom. The disposition to buy for a longer distance as contrasted with short buying that has prevailed over the second quarter is marked. An important producer of pig iron sold more iron in the opening 21 days of June than in any entire month so far this year. In many cases melters in placing their third quarter needs are adding tonnage to carry them through the rest of June. Typical of current inquiries are 2000 tons of malleable and 1000 tons of foundry for Chicago delivery. The aggregate of inquiry from 200 to 1000 tons is heavy. Active furnaces include two Iroquois, two Federal, two Mayville and Zenith. More inquiry for charcoal iron for last half year delivery is developing. A local steelmaker has placed 200 tons. Low phosphorus is inactive and not strong at $30 to $30.50, delivered.

St. Louis, June 22.—An increased volume of pig iron sales featured the St. Louis market during the past week. The total was larger than that for the month or six weeks preceding. Inquiries have increased almost as heavily as sales. The aggregate of sales was approximately 70,000 tons, including all grades. Of this 55,000 to 60,000 tons was sold by the St. Louis Coke & Iron Co., to steel plants, jobbing foundries, stove plants, equipment makers and specialty manufacturers. The two largest transactions combined involved 45,000 tons of basic for users in this district. The cut in the price of southern iron from $22 to $21 led to a fair amount of buying. Northern iron has been sold mainly at prices figuring back to $20 to $21, Chicago. The leading local producer continues to quote $22.00 to $22.50, f.o.b. Granite City.

Birmingham, Ala., June 22.—Sales of moderate size tonnages of pig iron show a fair aggregate and lead makers to expect a larger movement shortly. The new quotations on a $21 base induced some buying, but larger melters have continued out of the market anticipating further concessions. While it has been reported that less than $21, base, has been done sellers deny it. Pipemakers have not yet purchased for third quarter.

New York, June 22.—Pig iron sales in this district in the past week totaled about 15,000 tons. Buyers who took 1000 tons or more each included the General Electric Co., Crane Co., Thatcher Furnace Co. and Moore Bros. Inquiries pending aggregate close to 25,000 tons. The largest is a quiet inquiry for 11,000 tons for two plants outside this territory. The largest inquiry for melt in this territory is from the Richardson & Boynton Co., which expanded its previous inquiry for 3500 tons for third quarter and now is inquiring for 8600 tons for the remainder of the year. The American Car & Foundry Co. is inquiring for some tonnage. Some price shading recently was noted but generally eastern Pennsylvania foundry iron is $21.50, base, nearest furnace. Buffalo iron is $20, base. The H. B. Smith Co., Westfield, Mass. placed 10,000 tons recently with the Mystic, Troy, Charlotte and Lackawanna furnaces at a price slightly under $19, base Buffalo. Several recent developments which have handicapped importations have served to remove foreign iron as a big competitor so the underlying situation is regarded as the best in some time.

Imports Higher—Exports Drop

Receipts Totaling 108,731 Tons Continue To Gain, While Shipments of 173,418 Tons Register Drop from April When 194,449 Tons Was Exported—May Pig Iron Imports Total 57,211 Tons—Germany Source of Most American Imports

EXPORTS of iron and steel from the United States in May totaling 173,418 dropped considerably from the 194,449 tons shipped in April, but remained above the monthly average for 1925, according to data just released by the iron and steel division, bureau of foreign and domestic commerce, department of commerce. Imports gained to 108,731 tons in May. April imports of 107,636 tons have been corrected from the total of 112,255 tons reported previously for that month, 4619 tons of manganese ore from Soviet Russia in Europe having been reported to the government as ferromanganese.

Pig iron imports in May totaled 57,211 tons of which 21,419 tons came from Germany, 12,236 tons from the United Kingdom and 11,848 tons from British India.

The largest drop in the export list was in tin and terne plate, May totals being 13,408 tons.

IMPORTS AND EXPORTS
Gross Tons

	—1926—		—1925—	
	Imports	Exports	Imports	Exports
Jan.	79,067	174,585	77,105	141,777
Feb.	100,213	157,187	92,353	102,299
March	93,107	169,438	92,115	155,348
April	107,636	194,449	71,233	155,375
May	108,731	173,418	67,789	150,612
June			82,853	136,847
July			64,642	139,861
Aug.			68,489	188,465
Sept.			68,445	136,791
Oct.			80,045	141,817
Nov.			79,771	171,134
Dec.			98,400	142,209
Total	488,754	869,077	943,240	1,762,571

ORIGIN OF MANGANESE IMPORTS
Concentrates
Gross Tons

	May	April	Five months ended May
Germany	4	16	46
Netherlands	.....	12	12
Norway	.....	1 700	1 721
Soviet Russia in Europe	12,472	23,842	80,405
Brazil	3,047	18,540	54,086
Turkey-in-Europe	.....	2,809	2,809
United Kingdom	.....	56	261
Canada	.....	40	40
Chile	.....	198	1,436
British India	3,764	2,717	9,681
British W. Africa	2,346	5,117	17,761
Totals	21,633	55,047	168,808
Manganese Ore Free			
Cuba	29	.....	29

ORIGIN OF IRON ORE IMPORTS
Gross Tons

	May	April
Germany	1,663	511
Spain	.....	174
Norway	10,868	.....
Sweden	7,051	.....
United Kingdom	85	10
Canada	10,225	586
Newfoundland and Labrador	9,980	.....
Cuba	59,200	39,360
Brazil	500	.....
Chile	102,600	139,800
Algeria and Tunis	30,966	14,300
Morocco	5,540	.....
Totals	238,678	194,731

ORIGIN OF PIG IRON IMPORTS
Gross Tons

	May	April	Five months ended May
Belgium	1,100	650	6,643
France	5,478	5,051	25,043
Germany	21,419	13,529	74,112
Netherlands	4,780	8,330	36,184
Sweden	54	409	937
United Kingdom	12,236	15,651	71,796
Canada	296	939	2,927
British India	11,848	9,798	55,523
Totals	57,211	55,473	269,054

ORIGIN OF FERROMANGANESE IMPORTS
Gross Tons

	May	April	Five months ended May
France	26	74	142
Germany	.....	.....	243
Norway	792	2,468	5,625
Soviet Russia in Europe	.....	4,610	4,619
United Kingdom	24	255	5,518
Canada	1,028	2,438	7,281
British India	157	.....	157
Totals	2,027	9,854	23,587

IMPORTS OF IRON AND STEEL
Gross Tons

	April 1926	May 1926	January through May 1926	January through May 1925
Pig iron	55,473	57,211	275,054	194,509
Ferromanganese, and alloys	5,235	2,027	18,968	37,388
Ferrosilicon	1,714	975	4,038	2,546
Scrap	2,203	1,939	21,743	42,978
Iron slabs	13	.....	42	1
Steel ingots, blooms, billets, etc.	1,448	5,377	13,861	15,254
Steel bars	8,582	12,386	40,637	21,934
Iron bars	757	237	2,489	7,487
Wire rods	783	701	4,145	3,509
Hoops, bands, and scrolls	1,900	3,973	9,343	5,086
Boiler and other plate	63	881	1,927	100
Sheets, skelp, and saw plates	769	593	2,564	1,904
Tin plate	1,327	15	1,395	107
Structural shapes	8,553	9,291	33,810	31,024
Rails and splice bars	10,015	1,803	18,221	18,173
Cast-iron pipe	5,040	7,775	20,982	12,358
Other pipe and tubes	1,976	1,847	10,165	4,194
Barbed wire	172	166	2,050	1,980
Round iron and steel wire	433	182	1,621	1,418
Steel telegraph and telephone wire	.....	.....	82	373
Flat wire and strip steel	238	131	1,098	918
Wire rope and strand	172	259	869	747
Wire cloth and screenings	37	49	162	97
Other wire	205	331	1,014	163
Nails, tacks and staples	361	380	1,242	317
Bolts, nuts, rivets, and washers	69	19	225	49
Castings and forgings	98	183	1,007	1,348
Horseshoes	.....	.....	.....	86
Totals	107,636	108,731	488,754	406,048

ORIGIN OF IRON AND STEEL IMPORTS
Gross Tons

Country of origin	May 1926	Five Months 1926
Austria	23	349
Belgium	18,055	75,908
Czechoslovakia	6	653
Denmark	2	33
Finland	2	799
France	20,640	61,987
Germany	28,678	96,224
Italy	125	164
Lithuania	.....	1,530
Netherlands	6,207	50,982
Norway	877	5,808
Sweden	1,724	10,369
Switzerland	1	6
United Kingdom	15,320	87,399
Canada	5,061	28,606
Honduras	.....	1
Panama	.....	7,748
Mexico	.....	172
Other Brit. West Indies	.....	403
Cuba	2	3,599
Dominican Republic	.....	62
Chile	.....	4
India	12,005	55,933
China	1	3
Java and Madura	.....	1
Japan	2	11
Total	108,731	488,754

EXPORTS OF IRON AND STEEL
Gross Tons

	April —1926—	May —1926—	January through May 1926	January through May 1925
Pig iron, not including ferroalloys	2,010	1,107	7,747	8,696
Ferromanganese and spiegeleisen	2	1	171	4,063
Scrap	13,759	12,654	49,906	30,112
Ingots, blooms, skelp, etc.	5,966	7,981	24,493	26,051
Iron bars	509	519	1,803	2,225
Steel bars	13,096	10,529	59,432	48,588
Alloy steel bars	508	273	2,238	2,078
Wire rods	1,201	1,899	8,607	10,368
Plates	10,397	11,155	54,181	45,449
Galvanized sheets	17,746	13,196	75,928	79,114
Black steel sheets	17,760	17,415	79,614	32,164
Black iron sheets	1,328	1,461	9,405	5,055
Hoops, bands and strip steel	4,082	3,929	22,269	16,354
Tinplate, terneplate, etc.	22,124	13,408	85,910	66,493
Structural shapes, plain material	11,616	15,618	59,974	35,764
Structural materials, fabricated	7,936	5,301	37,988	28,275
Metal lath	365	590	2,062	1,204
Steel rails	15,859	11,405	56,696	59,937
Rail fastenings, switches, frogs, etc.	2,613	2,742	17,481	12,693
Boiler tubes and welded pipe	24,069	19,161	112,217	89,559
Malleable iron screwed pipe fittings	1,841	902	5,426	3,688
Cast-iron screwed pipe fittings	1,236	817	4,188	2,160
Cast-iron pressure pipe and fittings	737	737	3,648	5,167
Cast-iron soil pipe and fittings	529	4,300	6,329	4,367
Plain wire	3,358	3,394	17,122	16,067
Barbed-wire and woven-wire fencing	5,997	4,925	26,220	31,966
Wire cloth and screenings	141	189	771	768
Wire rope	375	593	2,308	2,022
Insulated wire and cable	26	28	289	379
Other wire and manufactures of	546	635	3,439	2,158
Wire nails	1,242	1,145	5,385	3,668
Nails other than wire	619	633	3,260	4,042
Tacks	119	86	404	*
Horseshoes	30	15	240	319
Bolts, nuts, rivets, except track	1,471	1,121	5,962	7,117
Car wheels and axles	1,175	856	7,078	9,143
Iron castings	673	814	3,391	3,723
Steel castings	1,151	856	4,301	2,418
Forgings	237	178	1,194	1,034
Total	194,449	173,418	869,077	705,448

Distribution Draws Emphasis

Session of Society of Industrial Engineers at Philadelphia Convention Devoted to Marketing Problems—National Census of Distribution Suggested—Advertising Classed as the Tool of Competition

THAT distribution is becoming one of the increasingly important problems confronting American industry today was reflected by the Society of Industrial Engineers, at its annual convention in Philadelphia last week, in devoting an entire session to the discussion of this subject. The chief speaker was Alvin E. Dodd, manager of the domestic distribution department of the Chamber of Commerce of the United States.

From the old days when consumers sought merchandise, said Mr. Dodd, production has been expanded and developed to an extent which makes it more necessary to develop better methods for locating and reaching the buyers. Mr. Dodd told about the feeling in Washington that a prime requirement of industry at this time is a census of distribution. This census, he said, should list the distributors of various kinds of goods all over the country. It should show the amount of products on hand at producing plants, in transit and in the various distributing units. "If manufacturers had possessed such information in 1921, for instance," said Mr. Dodd, "they would not have had their fingers burned." Mr. Dodd mentioned these factors as only a few of many involved in the general complicated phase of business known as distribution.

Marketing Plan Essential

Mr. Dodd told about a large manufacturer who visited Washington last year and explained that he had figured that volume production would increase the prosperity of his business. He explained that he had obtained the volume but that as production increased the losses became greater. There was launched a sweeping investigation into the distribution program of this manufacturer. He was shown how he could improve on his methods and as a result has been able to put his company on a basis of profit. Mr. Dodd cited this as one of numerous instances where manufacturers who are highly successful in production have great difficulty in working out distribution methods owing to the failure of business to develop its marketing and producing divisions with equal emphasis.

Individual cases were cited by Mr. Dodd to show how progress has been made in eliminating waste in distribution. He described a hardware jobber who was dissatisfied with the narrowing down of his profits in the last few years. In analyzing the various factors in his business he found that approximately 50 per cent of the lines that he handled furnished more than 90 per cent of his total business. He further found that while title passed to his retailers the minute the goods left his warehouse the retailers were not paying him until considerably later. As a result he decided that he would keep title to the goods until they had been sold by the retailers. By this method he maintains his stocks on the retailers' shelves instead of in his warehouse. He arranged to have his own men go to these stores and take inventories; thus he was able to locate the goods which had the quickest turnover and eliminate those which were slow-moving. As a result this jobber is doing a much more profitable business than formerly. Mr. Dodd, in the discussion, declared that he did not advocate selling on consignment as a general policy.

Another illustration concerned a jobber in Oklahoma who was dissatisfied with the showing of his retailers. He found that they were in debt to him on the average of $2500, whereas for $3000 he could stock a model store. He bought them out and now has a chain of stores which are doing much better than the retailers did, for the reason that the jobber now has the opportunity for directing the sales and display methods.

"It is impossible to disassociate manufacture from distribution," said Mr. Dodd. "The goods produced must be moved to consumers. Profits earned by efficient fabrication must not be dissipated by retardation in the movement of the product from factory to consumer. Essentially the distributive machinery is only a continuation and extension of the fabricating machinery.

Walter Drew, vice president of *Forbes Magazine*, New York, spoke on the elimination of waste in advertising. He told about rivalry such as that between zinc and lead in the paint industry, and that between all-steel and steel and wood automobile bodies. It is possible through science to decide which of two competing materials is preferable, he said, but the fact remains that human nature is as it is, and that there are huge investments in the factories, tends to postpone the time when one rival ultimately will supplant another. He classed advertising as a tool of competition.

W. B. Ferguson, production manager of the Newport News Shipbuilding & Dry Dock Co., told about methods employed by his company in eliminating waste. There were other sessions devoted to discussion of management problems, research, education, office methods and the elimination of waste in labor.

Locomotive Industry Shows Decrease

Washington, June 22.—Activity in the locomotive industry in 1925 shows a decrease from 1923, according to the biennial census of manufactures by the department of commerce. Establishments engaged in the industry totaled 18 in 1925 compared with 19 in 1923, while wage earnings dropped from 30,672 to 12,809 in the same period. Wages showed a decrease of 64.9 per cent of from $51,866,976 to $18,218,843. Production in 1925 was 1191 compared with 3422 in 1923, a drop of 65.2 per cent. Repairs and all other products fell from $37,501,929 to $23,147,850 or a decline of 38.3 per cent. Value added by manufacture showed the greatest loss, falling 74 per cent, or from $91,131,423 to $23,671,992.

Form Alloy Foundry

Alloy Cast Steel Co., Marion, O., has been organized and has taken over the electric steel foundry of the Fairbanks Steam Shovel Co. recently sold at receiver's sale. The plant is being overhauled and placed in condition to produce 400 tons monthly. High grade electric steel castings in various alloys will be manufactured. Organizers were John D. Owens, C. A. Owens, M. C. McNeil, H. J. Barnhart, Frank D. Glosser, Walter A. Dorsey and E. J. Schoenlaub.

Steel Output Sets New Mark

Complete Statistics for 1925 Show Ingots and Castings Gain 19.7 Per Cent—Finished Rolled Products Expand 18.87 Per Cent—Improvement Is General

PRODUCTION OF STEEL INGOTS AND CASTINGS BY PROCESSES.

Years	Open-hearth. Basic.	Open-hearth. Acid.	Open-hearth. Total.	Bessemer.	Crucible.	Electric.	Miscellaneous	Total. Gross Tons.
1911	14,685,932	912,718	15,598,650	7,947,854	97,653	29,105	2,844	23,676,106
1912	19,641,502	1,139,221	20,780,723	10,327,901	121,517	18,309	2,853	31,251,303
1913	20,344,626	1,255,305	21,599,931	9,545,706	121,226	30,180	3,831	31,300,874
1914	16,271,129	903,555	17,174,684	6,220,846	89,869	24,009	3,622	23,513,030
1915	22,308,725	1,370,377	23,679,102	8,287,213	113,782	69,412	1,527	32,151,036
1916	29,616,658	1,798,769	31,415,427	11,059,039	129,692	168,918	604	42,773,680
1917	32,087,507	2,061,386	34,148,893	10,479,960	126,716	304,543	495	45,060,607
1918	32,476,571	1,982,820	34,459,391	9,376,236	115,112	511,364	329	44,462,432
1919	25,719,312	1,229,382	26,948,694	7,271,562	63,572	384,452	2,952	34,671,232
1920	31,375,723	1,296,172	32,671,895	8,883,087	72,265	502,152	3,535	42,132,934
1921	15,082,564	507,238	15,589,802	4,015,938	7,613	169,499	945	19,783,797
1922	28,387,171	921,812	29,308,983	5,919,298	28,606	346,039	....	35,602,926
1923	34,665,021	1,234,636	35,899,657	8,484,088	44,079	515,872	....	44,943,696
1924	30,719,523	857,827	31,577,350	5,899,590	22,473	432,526	....	37,931,939
1925	37,087,342	947,146	38,034,488	6,723,962	19,562	615,512	....	45,393,524

PRODUCTION OF STEEL CASTINGS.

1911	266,626	304,565	571,191	57,101	14,030	1,878	2,427	646,627
1912	443,998	426,850	870,848	68,750	20,550	4,162	2,311	966,621
1913	460,161	450,055	910,216	80,506	17,571	9,207	3,244	1,020,744
1914	334,144	270,173	604,317	65,882	11,186	8,551	3,310	693,246
1915	333,103	402,229	735,332	92,476	14,756	23,064	1,196	866,824
1916	605,512	570,937	1,176,449	142,791	9,351	42,870	302	1,371,763
1917	558,568	654,588	1,213,156	159,272	3,834	64,911	234	1,441,407
1918	505,880	634,950	1,140,830	160,844	1,330	108,296	110	1,411,410
1919	313,965	448,555	762,520	98,819	1,009	111,510	2,579	976,437
1920	449,330	537,070	986,400	104,980	1,729	155,196	3,237	1,251,542
1921	217,937	216,488	434,445	38,809	736	85,095	628	559,713
1922	425,981	404,767	830,748	47,733	1,045	154,982	.....	1,034,508
1923	571,310	581,299	1,152,609	67,512	1,952	235,958	.....	1,458,031
1924	456,518	402,901	859,419	53,437	1,377	206,549	.....	1,120,782
1925	455,282	462,303	917,585	53,834	1,833	279,534	.....	1,252,786

PRODUCTION OF ALLOY STEEL INGOTS AND CASTINGS.

Years.	Ingots.	Castings.	Total.	Years.	Ingots.	Castings.	Total.
1912..	689,392	103,109	792,501	1919..	1,435,816	45,372	1,481,188
1913..	625,430	88,927	714,357	1920..	1,591,939	68,353	1,660,292
1914..	577,107	69,846	646,953	1921..	769,293	40,255	809,548
1915..	923,251	97,896	1,021,147	1922..	1,614,392	59,104	1,673,496
1916..	1,306,157	56,458	1,362,615	1923..	2,014,269	92,220	2,106,489
1917..	1,576,806	67,529	1,644,335	1924..	1,940,461	85,948	2,026,409
1918..	1,721,367	66,485	1,787,852	1925..	2,320,390	112,583	2,432,973

PRODUCTION OF ALLOY STEEL INGOTS AND CASTINGS BY PROCESSES, GROSS TONS, 1925.

Processes.	Ingots.	Castings.	Total.
Open-hearth steel—basic	1,935,676	6,729	1,942,405
Open-hearth steel—acid	60,959	46,135	107,094
Bessemer steel	67,774	14,703	82,477
Crucible steel	6,607	610	7,217
Electric steel	249,374	44,406	293,780
Total.....Gross tons.	2,320,390	112,583	2,432,973

TOTAL PRODUCTION OF ALL KINDS OF FINISHED ROLLED IRON AND STEEL, 1889–1925.

Years.	Iron and steel rails.	Plates and sheets.	Nail plate.	Wire rods.	Structural shapes.	All other finished rolled.	Total. Gross tons.
1889.	1,522,204	716,490	259,409	363,851	.....	2,374,968	5,236,928
1890.	1,885,307	809,981	251,828	457,099	.....	2,618,660	6,022,875
1891.	1,307,176	678,927	223,312	536,607	.....	2,644,941	5,390,963
1892.	1,551,844	751,460	201,242	627,829	453,957	2,579,482	6,165,814
1893.	1,136,458	674,343	136,113	537,272	387,307	2,104,190	4,975,685
1894.	1,021,772	682,900	108,262	673,402	360,305	1,795,570	4,642,211
1895.	1,306,135	991,459	95,085	701,130	517,920	2,487,845	6,189,574
1896.	1,122,010	965,776	72,137	623,986	495,571	2,236,361	5,515,841
1897.	1,647,892	1,207,286	94,034	970,736	583,790	2,497,970	7,001,728
1898.	1,981,241	1,448,301	70,188	1,071,683	702,197	3,239,760	8,513,370
1899.	2,272,700	1,903,505	85,015	1,036,398	850,376	4,146,425	10,294,419
1900.	2,385,682	1,794,528	70,245	846,291	815,161	3,575,536	9,487,443
1901.	2,874,639	2,234,425	68,850	1,365,934	1,013,150	4,772,329	12,349,327
1902.	2,947,933	2,665,409	72,936	1,574,293	1,300,326	5,383,219	13,944,116
1903.	2,902,477	2,599,665	64,102	1,503,455	1,095,513	4,952,185	13,207,697
1904.	2,284,711	2,421,398	61,601	1,099,028	949,146	4,597,497	12,013,381
1905.	3,375,929	3,532,230	64,542	1,808,688	1,660,519	6,398,107	16,840,015
1906.	3,977,887	4,182,156	54,211	1,571,614	2,118,772	7,383,828	19,588,468
1907.	3,633,654	4,248,832	52,027	2,017,583	1,940,352	7,972,374	19,864,822
1908.	1,921,015	2,649,693	45,747	1,816,949	1,083,181	4,311,608	11,828,193
1909.	3,023,843	4,234,346	63,740	2,333,685	2,275,562	7,711,506	19,644,690
1910.	3,636,031	4,955,484	45,294	2,241,830	2,266,890	8,475,750	21,621,279
1911.	2,822,790	4,488,049	48,522	2,450,453	1,912,367	7,316,999	19,039,171
1912.	3,327,915	5,875,080	45,331	2,653,553	2,846,487	9,908,475	24,656,841
1913.	3,502,780	5,751,037	37,503	2,464,807	3,004,972	10,030,144	24,791,243
1914.	1,945,095	4,719,246	38,573	2,431,714	2,031,124	7,204,444	18,370,196
1915.	2,204,203	6,077,694	31,929	3,093,907	2,437,003	10,546,188	24,392,924
1916.	2,854,518	7,453,980	30,088	3,518,746	3,029,964	15,493,093	32,380,389
1917.	2,944,161	8,267,616	22,864	3,137,138	3,110,000	15,585,921	33,067,700
1918.	2,540,892	8,799,135	18,310	2,562,390	2,849,969	14,385,058	31,155,754
1919.	2,203,843	7,372,814	12,832	2,538,476	2,614,036	10,359,543	25,101,544
1920.	2,604,116	9,337,080	20,577	3,136,907	3,306,748	13,941,835	32,347,863
1921.	2,178,818	4,260,374	14,573	1,564,330	1,272,624	5,483,087	14,774,006
1922.	2,171,776	7,968,397	21,960	2,654,741	2,718,768	10,916,353	26,452,004
1923.	2,904,516	9,497,717	22,833	3,075,892	3,405,197	14,370,921	33,277,076
1924.	2,433,332	8,087,883	22,175	2,522,545	3,283,708	11,736,792	28,086,435
1925.	2,785,257	9,807,659	22,038	2,844,656	3,604,130	14,323,220	33,386,960

STEEL ingots and castings produced in 1925 amounted to 45,393,524 gross tons, thereby establishing a new record for the country, according to official statistics compiled by the American Iron and Steel Institute. This output was 7,461,585 tons or 19.7 per cent better than the 37,931,939 tons of 1924, and 449,828, tons, or 1 per cent better than the 44,943,696 tons of 1923. Production of all kinds of iron and steel rolled into finished forms showed an increase of 5,300,525 tons, or 18.87 per cent, compared with the previous year.

Ingots alone totaled 44,140,738 tons, which compared with the 36,811,157 tons of the preceding year, was an increase of 7,329,591 tons, or 19.9 per cent. Steel castings in 1925 amounted to 1,252,786 tons, a gain of 132,004 tons, or 11.7 per cent over the 1,120,782 tons of 1924. Although ingots made a new high record, castings were fifth highest, being exceeded by 1916, 1917, 1918 and 1923. In 1925, as well as 1924, ingots were made in 152 works, while steel castings were made in 292 works in 1925, as compared with 284 works in the preceding year.

Included in the 37,087,342 tons of basic open-hearth steel ingots and castings produced in 1925 were 2,797,318 tons of duplex ingots and castings which were made from metal partly purified in basic open-hearth furnaces, against 2,131,856 tons in 1924, an increase of 665,462 tons, or 31.22 per cent. Duplex steel made in 1923 was 2,919,286 tons and in 1922, 1,651,089 tons. Alloy steel produced in 1925 was 2,432,973 tons, as compared with 2,026,409 tons the year before. Of this amount, 2,320,390 tons were ingots and 112,583 tons were castings. Electric steel made up 293,780 tons of the total, as against 188,563 tons in 1924.

Finished rolled iron and steel made in 1925 amounted to 33,386,960 gross tons, an increase of 5,300,525 tons or 18.87 per cent over the 28,086,435 tons of 1924. This output established a new record, the previous high mark having been attained in 1923. During 1925, plants rolling finished forms of iron and steel totaled 362, as compared with 376 plants in the previous year. Of the total finished rolled production last year, about 97.82 per cent was from steel, against about 97.51 per cent in 1924.

Increases in various products over 1924 covered a range varying from about 1.87 per cent for skelp to 32.2 per cent for merchant bars. Gains of principal products were as follows: Rails, 14.4 per cent; plates and sheets, 21.2 per cent; wire rods, 12.7 per cent; structural shapes, 9.75 per cent; merchant bars 32.2 per cent; concrete bars, 24.9 per cent and skelp 1.87 per cent. Plates and sheets increased from 8,087,883 tons to 9,807,659 tons; wire rods from 2,522,545 tons to 2,844,656 tons; structural shapes from 3,283,708 tons to 3,604,130 tons; merchant bars from 4,280,921 tons to 5,659,315 tons; concrete bars from 656,122 tons to 819,587 tons; skelp from 3,170,543 tons to 3,299,768 tons; tin and terne plate from 3,177,785,467 pounds to 3,713,459,757 pounds; galvanized sheets from 2,384,862,349 pounds to 2,717,332,128 pounds; cut and wire nails from 15,842,986 100-pound kegs to 16,189,858 kegs; and pipes and tubes from 2,824,256 tons to 3,030,541 tons.

Finished Goods Make Record

PRODUCTION OF CONCRETE BARS, SHOWING IRON AND STEEL CONCRETE BARS SEPARATELY, GROSS TONS, 1909–1925.

Years.	Iron.	Steel.	Total.	Years.	Iron.	Steel.	Total.
1909	.....	159,352	159,352	1918	468	344,152	344,620
1910	4,645	236,464	241,109	1919	2,295	416,726	419,021
1911	2,388	256,353	258,741	1920	698	571,747	572,445
1912	2,500	271,832	274,332	1921	1,004	226,134	227,228
1913	113	319,557	319,670	1922	696	575,120	575,816
1914	.....	288,471	288,471	1923	368	680,499	680,867
1915	.....	353,408	353,408	1924	507	655,615	656,122
1916	2,683	458,717	461,400	1925	1,195	818,392	819,587
1917	1,497	469,687	471,184	.....	.....	.....	.....

PRODUCTION OF HEAVY AND LIGHT STRUCTURAL SHAPES, GROSS TONS, 1914–1925.

Years.	Heavy shapes.	Light shapes.	Total.	Years.	Heavy shapes.	Light shapes.	Total.
1914	1,787,281	243,843	2,031,124	1920	2,741,120	565,628	3,306,748
1915	2,031,407	405,596	2,437,003	1921	1,082,727	189,897	1,272,624
1916	2,649,961	380,003	3,029,964	1922	2,337,026	381,742	2,718,768
1917	2,575,810	534,190	3,110,000	1923	2,917,446	457,751	3,375,197
1918	2,438,126	411,843	2,849,969	1924	2,805,084	478,624	3,283,708
1919	2,136,424	477,612	2,614,036	1925	3,049,817	554,313	3,604,130

PRODUCTION OF MERCHANT BARS, SHOWING IRON AND STEEL MERCHANT BARS SEPARATELY, GROSS TONS, 1905–1925.

Years.	Iron.	Steel.	Total.	Years.	Iron.	Steel.	Total.
1905	1,322,439	2,271,162	3,593,601	1916	993,948	5,236,354	6,230,302
1906	1,481,348	2,510,852	3,992,200	1917	983,926	5,226,031	6,209,957
1907	1,440,356	2,530,632	3,970,988	1918	846,898	5,395,851	6,242,749
1908	685,233	1,301,405	1,986,638	1919	446,549	3,945,075	4,391,624
1909	952,230	2,311,301	3,263,531	1920	663,032	5,467,208	6,130,240
1910	1,074,163	2,711,568	3,785,731	1921	198,324	1,367,430	1,565,754
1911	835,625	2,211,737	3,047,362	1922	317,665	3,660,993	3,978,658
1912	944,790	2,752,324	3,697,114	1923	404,730	5,148,066	5,552,796
1913	1,026,632	2,930,977	3,957,609	1924	258,737	4,022,184	4,280,921
1914	563,171	1,960,460	2,523,631	1925	290,488	5,368,827	5,659,315
1915	657,107	3,474,135	4,131,242	.....	.....	.....	.....

PRODUCTION OF SKELP, SHOWING IRON AND STEEL SKELP SEPARATELY, GROSS TONS, 1905–1925.

Years.	Iron.	Steel.	Total.	Years.	Iron.	Steel.	Total.
1905	452,797	983,198	1,435,995	1916	355,445	2,572,229	2,927,674
1906	391,517	1,137,068	1,528,585	1917	336,591	2,337,640	2,674,231
1907	444,536	1,358,091	1,802,627	1918	258,500	2,305,511	2,564,011
1908	297,049	853,534	1,150,583	1919	192,146	2,363,632	2,555,778
1909	370,151	1,663,230	2,033,381	1920	252,403	2,967,886	3,220,289
1910	350,578	1,477,616	1,828,194	1921	115,523	1,815,052	1,930,575
1911	322,397	1,658,276	1,980,673	1922	218,868	2,653,347	2,872,215
1912	327,012	2,119,804	2,446,816	1923	216,846	3,517,490	3,734,336
1913	312,746	2,189,218	2,501,964	1924	165,581	3,004,962	3,170,543
1914	264,340	1,718,091	1,982,431	1925	178,586	3,051,182	3,229,768
1915	262,198	2,037,266	2,299,464	.....	.....	.....	.....

PRODUCTION OF SEAMLESS STEEL TUBES, GROSS TONS, 1916–1925.

Years.	Hot finished.	Cold drawn.	Total.	Years.	Hot finished.	Cold drawn.	Total.
1916	61,235	129,238	190,473	1921	59,663	58,221	117,884
1917	87,615	139,060	226,675	1922	120,652	137,183	257,835
1918	142,308	150,586	292,894	1923	202,669	201,114	403,783
1919	75,864	121,505	197,369	1924	131,758	129,399	261,157
1920	132,091	159,479	291,570	1925	403,965	164,225	*568,190

PRODUCTION OF TINPLATES AND TERNE PLATES, 1892–1925.

Years.	Tinplates.	Terne plates.	Total pounds.
1892 (calendar year)	13,921,296	28,197,896	42,119,192
1893	64,536,209	59,070,498	123,606,707
1894	102,223,407	64,120,002	166,343,409
1895	165,927,907	88,683,488	254,611,395
1896	270,151,785	80,058,013	350,209,798
1897 (first 6 months)	203,028,258	49,545,643	252,573,901
1897 (second 6 months)	.....	.....	322,205,619
1898 (calendar year)	.....	.....	732,289,600
1899	.....	.....	808,360,000
1900 (cen. year end. May 31)	707,718,239	141,285,783	*850,004,495
1901 (calendar year)	.....	.....	894,411,840
1902	.....	.....	806,400,000
1903	.....	.....	1,075,200,000
1904 (cen. year end. Dec. 31)	867,526,985	158,857,866	*1,032,940,706
1905 (calendar year)	.....	.....	1,105,440,000
1906	1,100,373,000	193,367,000	1,293,740,000
1907	996,650,000	156,447,000	1,153,097,000
1908	1,048,896,000	154,179,000	1,203,075,000
1909	1,179,858,000	190,930,000	1,370,788,000
1910	1,450,821,000	168,184,000	1,619,005,000
1911	1,597,629,000	158,441,000	1,756,070,000
1912	1,965,659,000	191,396,000	2,157,055,000
1913	1,708,186,000	136,944,000	1,845,130,000
1914	1,939,785,000	146,195,000	2,085,980,000
1915	2,201,825,054	163,470,646	2,365,295,700
1916	2,552,224,275	214,176,952	2,766,401,227
1917	3,233,314,911	153,891,653	3,387,206,564
1918	3,216,247,675	85,376,569	3,301,624,244
1919	2,407,156,757	171,859,924	2,579,016,681
1920	3,079,953,351	158,067,437	3,238,020,788
1921	1,675,320,852	103,853,961	1,779,174,813
1922	2,707,648,715	177,235,512	2,884,884,227
1923	3,168,263,546	†207,106,248	3,375,369,794
1924	2,975,231,674	†202,553,793	3,177,785,467
1925	3,458,574,585	†254,885,172	3,713,459,757

*Includes 1,000,473 pounds in 1900 and 6,535,855 pounds in 1904 of "other sheet iron and sheet steel, tin or terne plated." †Includes 163,820,675 pounds of long terne plates in 1925, 107,986,974 pounds in 1924, and 106,764,720 pounds in 1923.

PRODUCTION OF CAST-IRON PIPE AND FITTINGS, NET TONS.

Years.	Gas and water.*	Soil and plumbers.	Total.	Years.	Gas and water.*	Soil and plumbers.	Total.
1916	934,626	279,707	1,214,333	1921	564,138	230,092	794,230
1917	748,173	250,928	999,101	1922	926,577	356,872	1,283,449
1918	508,300	111,373	619,673	1923	1,134,059	432,828	1,566,887
1919	514,664	195,417	710,081	1924	1,365,272	476,078	1,841,350
1920	636,862	249,653	886,515	1925	1,813,564	510,483	2,324,047

*Includes culvert pipe.

PRODUCTION OF IRON AND STEEL GALVANIZED SHEETS AND GALVANIZED FORMED PRODUCTS, 1915–1925.

Years.	Galvanized sheets.	Galvanized formed products.*	Total. Pounds.
1915	1,581,569,206	112,192,790	1,693,761,996
1916	1,346,924,950	130,302,195	1,477,227,145
1917	1,273,978,805	114,902,171	1,388,880,976
1918	1,159,778,807	121,110,267	1,280,889,074
1919	1,500,575,548	140,494,884	1,641,070,432
1920	1,871,360,951	143,894,730	2,015,255,681
1921	1,366,883,503	109,956,328	1,476,839,831
1922	2,109,991,396	165,713,067	2,275,704,463
1923	2,364,862,856	165,741,098	2,530,603,954
1924	2,228,960,835	155,901,514	2,384,862,349
1925	2,539,112,552	178,219,576	2,717,332,128

PRODUCTION OF PLATES AND SHEETS BY KINDS, 1924–1925.

Kinds.	1924—Gross tons.			1925—Gross tons.		
	Iron.	Steel.	Total.	Iron.	Steel.	Total.
Universal plates*	1,501	1,000,193	1,001,694	3,001	1,193,020	1,196,021
Sheared plates—						
Rolled on single stands	237	1,652,836	1,653,073	342	1,930,004	1,930,346
Roughed and fin. on sep. stands	.....	494,098	494,098	.....	627,084	627,084
Black sheets rolled on sheet or jobbing mills	31,375	3,235,055	3,266,430	38,216	4,058,016	4,096,832
Black plates, including black plates for tinning and black plate specialties rolled on tin mills	.....	1,672,588	1,672,588	.....	1,957,376	1,957,376
Total	33,113	8,054,770	8,087,883	41,559	9,766,100	9,807,659

*Include flats and bars over 6 inches wide.

PRODUCTION OF WROUGHT PIPE AND BOILER TUBES, SHOWING IRON AND STEEL SEPARATELY, 1924–1925.

Kinds of pipe.	1924—Gross tons.			1923—Gross tons.		
	Iron.	Steel.	Total.	Iron.	Steel.	Total.
Black, standard	59,044	1,021,388	1,080,432	63,507	1,168,868	1,232,375
Galvanized	33,702	420,317	454,019	39,113	509,454	548,567
Oil country goods	32,205	1,151,662	1,183,867	30,063	988,239	1,018,302
O. D. and misc.	.....	50,046	50,046	.....	168,519	168,519
Boiler tubes	15,880	40,012	55,892	18,429	44,349	62,778
Total	140,831	2,683,425	2,824,256	151,112	2,879,429	3,030,541

PRODUCTION OF MISCELLANEOUS ROLLED PRODUCTS, GROSS TONS.

Products.	1921.	1922.	1923.	1924.	1925.
Hoops	166,961	222,139	220,835	179,373	205,049
Bands and cotton-ties	111,426	271,101	348,480	294,269	356,165
Long angle splice bars, fish-plate bars, tie-plate bars, etc.	423,820	605,688	749,824	629,786	822,537
Rolled sheet piling	18,165	13,220	36,716	49,679	57,264
Railroad ties	10,361	14,811	20,167	14,968	13,826
Rolled forging blooms, forging billets, etc.	*108,456	*326,303	448,870	346,913	344,803
Blooms, billets, sheet bars, tinplate bars, etc., for export	7,500	11,200	781	437	157
Spike and chain rods, bolt and nut rods, horseshoe bars, hot rolled strips, shafting, tires, etc.	†912,835	†2,025,103	†2,577,249	†2,113,779	†2,814,719
Total	1,759,530	3,489,664	4,402,922	3,629,206	4,614,550

*Exports included.

PRODUCTION OF WIRE NAILS IN 100-LB. KEGS, 1894–1925.

Years.	Production.	Exports.	Consumption.	Years.	Production.	Exports.	Consumption.
1894	5,681,801	38,920	5,642,881	1910	12,704,902	960,295	11,744,607
1895	5,841,403	53,012	5,788,391	1911	13,437,778	1,200,957	12,236,821
1896	4,719,860	95,638	4,624,222	1912	14,659,700	1,530,353	13,129,347
1897	8,997,245	129,767	8,867,478	1913	13,559,727	977,477	12,582,250
1898	7,418,475	307,190	7,111,285	1914	13,132,814	809,167	12,323,647
1899	7,618,130	750,781	6,867,349	1915	14,383,026	2,051,475	12,531,551
1900	7,233,979	613,858	6,620,121	1916	17,147,665	3,363,876	13,783,789
1901	9,803,822	420,506	9,383,316	1917	17,040,666	2,574,054	14,466,612
1902	10,982,246	595,391	10,386,855	1918	12,279,800	1,763,460	10,516,340
1903	9,031,661	704,546	8,927,115	1919	13,094,221	2,011,045	11,083,176
1904	11,926,661	734,554	11,192,107	1920	16,449,506	2,087,195	14,362,311
1905	10,854,892	799,734	10,055,158	1921	11,889,412	629,650	11,259,762
1906	11,486,647	1,035,765	10,450,942	1922	15,053,330	1,232,467	13,820,863
1907	11,731,044	945,035	10,786,009	1923	17,672,582	1,029,975	16,642,607
1908	10,662,972	593,819	10,069,153	1924	15,101,318	485,287	14,616,031
1909	13,916,053	686,687	13,229,366	1925	15,453,747	220,365	15,233,382

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

EATON SPRING CORP., a subsidiary of the Eaton Axle & Spring Co., Cleveland, has bought the Beans Spring Co., Massillon, O., and will continue manufacture of its products. John F. Beans will be president and general manager of the Eaton Spring Corp. Financing will be through the subsidiary and will not affect the parent company. Under the consolidation axles and bumpers will be manufactured at Cleveland and springs at Detroit and Massillon. The production of the combined companies it is estimated will absorb 10,000 tons of steel per month.

* * *

GIBBS WELDING MACHINES CO., Bay City, Mich., manufacturer of electric arc spot and seam welders, is building an addition that will more than double its production.

* * *

CHEMICAL & VACUUM MACHINERY CO. INC., Buffalo, N. Y., has bought from the Judelson Evapo-Dryer Corp., New York, rights to build and sell exclusively the dryer for which the latter holds patents.

* * *

PHILADELPHIA RUST PROOF CO., specializing in the coating of metals by various processes, has moved to larger quarters at 109 West Montgomery avenue, and has added a sherardizing department.

* * *

THE MILLS CO., Cleveland, manufacturer of metal partitions, has bought 10½ acres on Wayside road, Cleveland, containing 50,000 square feet of buildings, built by the Jones Gear Co., and later occupied by the L. & M. Axle Co.

* * *

DWIGHT P. ROBINSON & CO., New York, has been given a contract by the Boston & Maine railroad for an extensive program of rearrangement and improvement of its freight terminal at Boston, on which work will be started immediately.

* * *

HEIL CO., Milwaukee, manufacturer of steel dump bodies, welded compartment and storage tanks and hydraulic hoists, is celebrating its twenty-fifth anniversary by occupying its new plant, consisting of offices, power house and shops. A hoist shop 100 x 300 feet is under construction. Modern machinery has been installed in the new shops. Clement C. Smith is president and Julius P. Heil is vice president and general manager.

* * *

OAKLAND STEEL FOUNDRY, Ford and Peterson streets, Oakland, Calif., has been organized by F. E. Done, 1505 Santa Clara avenue, Alameda, Calif., and has started construction of a foundry 180 x 200 feet. An electric furnace of 1½ tons capacity will be installed for the production of steel castings.

* * *

BREUER-STONE CO., Watertown, Wis., J. C. Stone president, will start at once the production of carbon dioxide refrigerating units designed by S. L. Bright, San Francisco. Production rights for several states have been taken by Mr. Stone. Mr. Bright will be associated with the Watertown company to develop the device further.

* * *

HOWARD SNYDER, who started the first oxy-acetylene welding shop in Cleveland about 15 years ago, has bought out other interests in Welding Metals Mfg. Co., 4400 Perkins avenue, Cleveland, with which he has been connected for some time. The policy of the company will be to enlarge its welding service department at the expense of the manufacture of equipment. Additional welding machinery is being installed.

* * *

CENTRAL STATES PORTLAND CEMENT CO., recently organized at Chicago by interests connected with the Cowham Engineering Co., has bought 170 acres close to LaSalle, Ill., and will proceed at once to build a plant for the production of cement, with capacity for 1,000,000 barrels yearly. The wet process will be used. John L. Senior is president, Fritz Worm, LaSalle, Ill., R. A. Drum, Chicago, and H. J. Weeks, Chattanooga, Tenn., are vice presidents.

* * *

VANCAMP HARDWARE & IRON CO., Indianapolis, Ind., has elected John T. Martindale president to succeed Raymond P. VanCamp, who died recently. An advisory board has been formed as follows: C. J. Prentiss, vice president; C. B. Crets, vice president; A. B. Caldwell, vice president and treasurer; J. C. Carrington, assistant secretary; A. R. Dewey, assistant treasurer; W. F. Comer, secretary; H. C. Ballard, superintendent and the following heads of these departments: G. C. Klippel, credits; A. J. Pfeiffer, city sales; H. L. Roeger, automobile accessories, M. G. Herold, paints and glass and F. F. Lehr, cost department.

Builds Magnesite Plant

Seattle, Wash., June 18.—The Northwest Magnesite Co. is building a new plant on the Great Northern Railroad Co.'s docks, Smith Cove, to replace a smaller and less efficient terminal destroyed by fire several months ago. The company's mineral deposits at Chewelah, northeastern Washington, are said to be among the largest in the country. The magnesite is prepared for shipment at the mine, brought to Seattle by rail and from this port shipped to the Atlantic by water for distribution among eastern steel plants.

The new plant will have a storage capacity of 4000 tons. It is being equipped with automatic machinery capable of handling 150 tons per hour from the cars while the loading equipment can give vessels cargo at the rate of 500 tons per hour.

Stoker Sales Drop

Washington, June 22.—Sales of mechanical stokers in May totaling 129 were the smallest since February, according to reports to the department of commerce from 15 manufacturers but were above 122 sold in May 1925. Fire tube installations showed a gain from 22 to 54 while water tube dropped from 123 to 75. Further comparisons follow:

	Stokers sold	Fire tube boilers	Water tube boilers
1923 Total	1,464	177	1,287
1924 Total	1,128	161	967
1925 Total	1,348	263	1,085
April	120	23	97
May	122	23	99
June	128	26	102
July	147	30	117
August	91	27	64
September	119	31	85
October	114	22	92
November	76	8	68
December	108	21	87
January, 1926	72	10	62
February	83	12	71
March	132	31	101
April	145	22	123
May	129	54	75

Industrial Men in the Day's News

John Hulst, New Vice President of the United States Steel Corp.

HIS career in the steel industry started 28 years ago as a draftsman with the Ohio Steel Co., later a part of the Carnegie Steel Co. His advancement to positions of increasing importance was rapid.

BORN in the Netherlands, he emigrated to the United States at the age of two, being reared in an atmosphere of seriousness and responsibility. He taught school when but 14 years old.

ASIDE from his work, his chief interest is a farm in Michigan where he spends his vacations. He is a man of retiring disposition, well liked by his associates and subordinates.

JOHN HULST, recently elevated to the vice presidency of the United States Steel Corp., started his career under auspices about as far removed from the steel industry as could be imagined. Born in the Netherlands in 1872, he emigrated to the United States at the age of two. His father was the Rev. Lammert J. Hulst, a minister of the Dutch church, who came to this country to take charge of a pulpit at Grand Rapids, Mich. There the Hulst family quickly found itself at home. Settlers from Holland lived all about them. At that time there were no fewer than 17 churches at Grand Rapids where the services were in the Dutch tongue. Rev. Hulst, who delivered his last sermon when 94 years old, was an insatiable reader, devoting most of his spare time to increasing his store of learning. John was encouraged to similar habits and went to school the entire year, to the public or so-called "English" school during the fall, winter and spring seasons and to the Dutch secular school during the summer months. The Dutch settlers were thrifty people who took the problems of life seriously. They believed in training their children for accepting responsibility.

Mr. Hulst taught Dutch school at Grand Rapids at the age of 14. Later, in 1891, after his graduation from the high school at Grand Rapids, he went for a year to Leland Stanford Jr. university at Palo Alto, Calif. Then he entered the University of Michigan, Ann Arbor, Mich., and in 1895 was graduated with the degree of mechanical engineer. After graduation he became a draftsman, first with the Whiting Foundry & Equipment Co. at Harvey, Ill., and then with the American Fire Engine Co. at Seneca Falls, N. Y. In 1898 he entered the steel industry, becoming a draftsman for the Ohio Steel Co., which later became the Ohio works of the Carnegie Steel Co. at Youngstown, O. Next he went with the South Sharon Steel Co., now the Farrell Works of the Carnegie Steel Co., Farrell, Pa., and from there to the New Castle works of the National Steel Co. at New Castle, Pa. In 1901 Mr. Hulst became chief engineer of the Mingo works of the National Steel Co., Mingo Junction, O. Later in that year he became chief engineer at the Ohio works of the Carnegie Steel Co. at Youngstown, O. In 1912 he was promoted to chief engineer of the Carnegie Steel Co., with offices in the main headquarters at Pittsburgh.

In 1916 Mr. Hulst was appointed assistant to vice president and chief engineer of the Steel corporation, with headquarters in New York. Since then he has continued as assistant to John Reis. When the latter retired a few weeks ago, Mr. Hulst was elevated to the vice presidency to succeed him.

Important work was done by Mr. Hulst during his career at the Ohio works. There he had charge of changing the blooming mill from a 2-high to a 3-high mill equipped with lifting tables. He also installed blast furnaces, open-hearth furnaces and a slabbing mill at that plant. Mr. Hulst was identified with the inception of the project that later materialized as the McDonald mills at Youngstown. He also was identified with the inception of the by-product coke oven plant at Clairton. Mr. Hulst was a member of the Steel corporation's com-

mittee that visited Europe in connection with the proposal to build a huge ordnance plant at Neville Island, Pittsburgh. The war ended before the plans for building this plant could be executed.

Mr. Hulst is unmarried and makes his residence at a hotel in New York. His chief interest, aside from his work, is his farm, in Michigan, where he spends his vacations.

Men of Industry

Personal News of a Business Character Pertaining to the Iron and Steel and Related Fields of Enterprise

JAMES H. GIBBONEY, chief chemist for the Norfolk & Western Railway Co., Roanoke, Va., was elected president of the American Society for Testing Materials at its

JAMES H. GIBBONEY

convention in Atlantic City this week. He was graduated from Virginia Polytechnic institute in 1901. He joined the Norfolk & Western in 1906. Mr. Gibboney has been active in testing materials for 20 years and has served on the research and specifications committees of the American Society for Testing Materials, American Railway association, American Railway Engineering association, American Society for Steel Treating and American Wood Preservers' association. For the past five years he has been chairman of committee A-5 on corrosion of iron and steel of the Testing Materials society.

Gustave W. Thompson, new vice president of the American Society for Testing Materials, was born July 27, 1865. He became chief chemist of the National Lead Co. in 1892 and director in 1916. He was director of the Williams-Harvey Corp. in 1917 and vice president in 1919. In 1917 he was made a director of Williams-Harvey Co., Ltd., London, and in 1920 a director of Titanium Pigment Co. In 1923 Mr. Thompson was director and vice president of the United Lead Co. and in 1925 was made director and treasurer of the Metallurgical & Chemical Corp. He was president of the American Institute of Chemical Engineers in 1918 and is a member of the American Chemical society, Society of Chemical Industries, American Society for Testing Materials, Chemists' club, New York, and Chemical Verein.

* * *

Maurice R. Hart has been appointed manager of the new office at Buffalo of the Morse Chain Co., Ithaca, N. Y. His headquarters will be in the Ellicott Square building, Buffalo, N. Y.

* * *

F. R. Glenner has been placed in charge of engineering and sales for the Hills-McCanna Co., Chicago, at its newly opened New York office, 53 Park Place. He will handle the company's nonferrous alloys, force feed lubricators and steam specialties.

* * *

A. E. Hitchner, affiliated with the East Pittsburgh, Pa., headquarters of the Westinghouse Electric & Mfg. Co., will become manager of the company's Los Angeles office, the position having been made vacant by the recent resignation of K. E. van Kuran.

* * *

William S. Milne has been appointed general superintendent of the Massey-Harris Harvester Co. plant at Batavia to succeed Percy E. Verity who has been transferred to Brantford, Ont., as general superintendent of the principal plant of the company. Mr. Milne has been assistant superintendent of the Toronto, Ont., plant for six years.

* * *

Joseph Harrington has been retained as advisory engineer in connection with the application of pulverized coal equipment to steam boilers by the Grindle Fuel Equipment Co., Harvey, Ill., subsidiary of the Whiting Corp. Mr. Harrington is the inventor of various types of mechanical stokers for boiler plants and is president of

GUSTAVE W. THOMPSON

the newly organized Joseph Harrington Co. which markets stokers for small boilers.

* * *

Charles C. Phelps, 473 Getty avenue, Paterson, N. J., and Charles J. Schmid have been appointed representatives for the Uehling Instrument Co., of that city, in the Northern New Jersey and metropolitan New York district. Mr. Phelps retains his position as treasurer of the Uehling company. In addition they will represent the combustion control division of A. W. Cash Co., Decatur, Ill.; Williams Gauge Co., Pittsburgh, and the National Boiler Protector Co., Dayton, O.

* * *

Delbert C. Davis and Charles L. Kenyon have been elected assistant treasurers of the General Electric Co., Schenectady, N. Y., according to announcement of R. S. Murray, treasurer. Mr. Davis formerly was with

the Fort Wayne Electric Works as assistant treasurer in charge of credits and collections. He came to Schenectady in 1909 as credit manager.

Mr. Kenyon joined the General Electric Co. in March 1924 in its collection department.

* * *

J. W. Hale, formerly assistant treasurer, has been elected secretary of E. J. Lavino & Co. and Lavino Furnace Co., Philadelphia, succeeding the late Henry F. Lavino who died May 27.

* * *

Fred E. Gross has been appointed New England representative for Waldo, Egbert & Maltby, Inc., Buffalo, formerly Waldo, Egbert & McClain, Inc. He formerly was a New York state representative for that company.

* * *

Harrison Browning, son of Earl H. Browning, vice president of Machine Products Corp., Cleveland, has just been appointed assistant engineer of the company. Mr. Browning was graduated recently from Massachusetts Institute of Technology.

* * *

Edwin Morey has been elected president and treasurer of the Automatic Packaging Machinery Co., Nashua, N. H. For many years he was treasurer of the Flather Mfg. Co., that city, builder of machine tools. He continues as general manager of the Flather company.

* * *

A. Milton Buck has joined the sales forces of the Bridgeport Brass Co., Bridgeport, Conn. He will represent that company in the District of Columbia and in Maryland, Virginia and West Virginia, having his headquarters in Washington. He will specialize on sales of flush valves and brass pipe.

* * *

Seth Marshall has been elected a director of the Zenith Furnace Co., Duluth, to succeed his father, the late A. M. Marshall. Other directors were re-elected as follows: C. W. Andrews, C. A. Luster, F. A. Brewer, W. P. Chinn, W. B. Castle, H. S. Pickands, Seymour Wheeler and R. S. Dutton.

* * *

Walter G. Zimmerman, district manager at Duluth for the American Bridge Co., Pittsburgh, steel fabricator, has left that office to become assistant contracting manager of the western division with headquarters in Chicago. Mr. Zimmerman graduated from Massachusetts Institute of Technology at Boston in 1898. He has served as president of the Duluth section of the American Society of Civil Engineers for 10 years. He was made the first honorary member of the Duluth section at a recent farewell dinner given in his honor.

* * *

James B. Armstrong, 303 Fifth avenue, New York, has been appointed district representative for the Cape Ann Anchor & Forge Co., Gloucester, Mass., manufacturer of hammered forgings, both rough forged and rough turned. Mr. Armstrong also represents the Lebanon Drop Forge Co. and the Lebanon Steel Foundry Co., Lebanon, Pa.

* * *

Leland Russell VanWert, recently named assistant professor in metallurgy at Carnegie Institute of Technology for the coming scholastic year, for the past six years has been a member of the faculty of the Harvard Engineering school. Several months ago James Aston, formerly metallurgist for A. M. Byers Co., Girard, O., was placed in charge of the department. Mr. Van Wert was graduated from Union college, Schenectady, N. Y., and studied metallurgy at Yale, Massachusetts Institute of Technology and University of Arizona.

* * *

H. N. Taylor, president N. & G. Taylor Co., Inc., Philadelphia, as chairman of the national air race committee, is organizing what will be the largest mobilization of air power the world ever saw, in a meet to be held in Philadelphia, Sept. 4-11. Mr. Taylor also is chairman of the aviation committee of the sesquicentennial.

Obituaries

URI T. HUNGERFORD, chairman of the board of U. T. Hungerford Brass & Copper Co., New York, died at his residence there June 16 in his eighty-fifth year. He was born in Torrington, Conn., Dec. 14, 1841. Mr. Hungerford came from New England stock, dating back to 1639. The name has been intimately associated with the brass industry in Connecticut where his father, John Hungerford, in 1834, built the first brass mill in Torrington.

In 1855 he attended the West Point academy where he studied for two years, leaving there to begin his business career in Philadelphia. In 1865 he became associated with Wallace & Sons, brass and copper rolling mills of Ansonia, Conn., acting as New York representative and manager until 1895 when he established the U. T. Hungerford Brass & Copper Co.

* * *

Gibson Field Howard, formerly president of the Howard Iron Works, Buffalo, died June 15 in Los Angeles where he moved in 1910 after selling out his company to the Otis Elevator Co. The Howard Iron Works had been founded by his grandfather, Gen. Rufus L. Howard, whom he succeeded in 1908.

* * *

Samuel R. Baldwin, superintendent of the works at New Castle, Pa. of the Stove & Range Co., Pittsburgh, died recently at the age of 85. After various associations at Pittsburgh he came to New Castle where he founded the plant known as Baldwin & Graham Stove Foundry which was consolidated in 1899 with the Stove & Range Co.

* * *

Henry C. M. Thompson, for a long time president of the American Hardware Corp., New Britain, Conn., died recently at his home. Previous to his presidency, Mr. Thompson had been associated with P. & F. Corbin Co., New Britain, Conn., and a treasurer of Hoggson Bros., New York, contractors.

* * *

Camille Cavallier, long prominent figure in the French metallurgical industry and president of the Societe Anonyme des Hauts-Forneaux and Fonderies de Pont-a-Mousson, Nancy, France, died there June 10. Mr. Cavallier was born in 1853 and started his career in 1873 as assistant to Mr. Roge, founder of the then small foundries at Pont-a-Mousson. He became chief engineer of the company and upon Mr. Roge's retirement was made general manager and sole director of the company. Mr. Cavallier was a member of the board of directors of many of the leading French industrial and mining companies. He was an officer of the Legion d'Honneur, honorary president of the chamber of commerce of Nancy, and in 1924 received from the hands of President Poincare the gold medal awarded by the French republic for the best services rendered the country in the export trade. Mr. Cavallier developed the famous Briey Iron Ore basin.

British Mills Do Well

(*Concluded from Page* 1658)

must be mentioned the loss of 1200 tons of steel plates which have been booked by the Patent Shaft & Axletree Co. of Wednesbury, and some bridge work for South Africa, which has gone to the Continent.

Building operations continue very much as usual in spite of the strike and large quantities of steel are being absorbed, though it is to be feared that more of this is coming from the continent. The increase in steel imports by 16,000 tons during April has already been reported, and a much larger increase will doubtless be shown in the May return. Constructional engineers are still building bridges, although they are hampered by slow railway transport. There is no lack of new building inquiries, some involving thousands of tons of steel. Constructional work must, of course, gradually diminish, despite the continual operations of mills, unless normal production soon becomes possible. It is obvious enough that self interest in the coal trade ought to bring an early settlement, and the coincidence of the invitation of the coal owners to the workmen for a general consultation, with the announcement of the railways that they propose using oil in hundreds of locomotives if the present experiment is successful, is not without significance. However, a serious blow has been administered to the steel trade.

The somewhat optimistic statement by Sir Peter Rylands at the meeting of the Iron and Steel institute that the worldwide demand and the ability to purchase is now in a fair recovery has been widely circulated, and on the whole is supported by the experience of the trade.

Importing steel merchants have no reason to complain of lack of activity. Many thousands of tons of foreign semifinished steel have been booked by Midland merchants during the past week, users being sufficiently confident to cover their requirements to the end of the year. Current prices are low enough to be attractive, billets being obtainable at £5 5s ($25.51) delivered against the English quotation of £6 ($29.16). Joists are cheaper than ever, being quoted at £4 14s ($22.84) f.o.b. Antwerp, equal to £5 18s ($28.67) delivered in Birmingham against the English price of £7 2s 6d ($34.62). These are to a tensile test of 28/32 tons, untested joists being offered at 1s ($0.24) cheaper. Plates suitable for construction can be bought at £6 7s 6d ($30.94) or £1 10s ($4.29) below the British price. These have a limited utility, so many builders and engineers are restricting their steel to British works. One effect of the strike has been to restrict the placing of orders to firms within the area of the builders, to avoid the cost and delay attendant upon defective rail transport. It should be said also that Belgians are showing a spirit of caution, in view of future currency uncertainties and the possibility that too well furnished order books may involve them in loss.

Belgian Market Gains Strength

BRUSSELS, June 11.—(*European Staff Service*)—Export prices of iron and steel products are firmer. While several sales were closed at old levels the market discloses a stronger undertone. Prices have been moving downward since the beginning of the year, but this movement, it is now believed, has been checked and an upward swing is anticipated. Mills which were offering merchant bars last week at £4 15s ($23) f.o.b. Antwerp now are asking £4 17s 6d ($23.65). German competition is keen and Belgian mills frequently are underquoted. Current orders are equal to shipments and manufacturers are satified to limit their commitments to from four to six weeks.

Domestic business is quiet. Prices have been increased in keeping with the advance in export prices. Buyers for domestic consumption are of the opinion that adjustments upward are premature and are deferring the placing of their orders. It is noted that despite the announcement of price increases little tonnage is being placed at the new levels. Well informed buyers still manage to place their specifications on the old price basis.

Transactions in pig iron have been light. Practically all producers are out of the market. The domestic price has attained 500 francs ($15) for tonnage specified for delivery before Aug. 1. Foundry pig iron for export average £3 6s ($16) f.o.b. Antwerp.

Semifinished steel products are practically unobtainable. Prices are firm. New tonnage is being turned down daily. Basic bessemer blooms are quoted nominally for export at £3 18s ($16.45). Billets are scarcer and easily command £4 4s ($20.35). Sheet bars bring from £4 9s to £4 10s ($21.50 to $21.75) f.o.b. Antwerp.

Competition for structural shape tonnage is unusually keen. Belgian makers refuse to go below £4 12s 6d ($22.40) per ton f.o.b. Antwerp;

Franc—$0.03

French mills are quoting £4 12s ($22.25) and German makers are naming £4 11s 6d ($22.10). Wire rods range from £5 5s ($25.45) to £5 7s ($25.90) with an extra of from four to five shillings for 3/16-inch.

An effort is being made to syndicate all European manufacturers of wire and wire products. German manufacturers have organized and are urging Czecho-Slovakian, Austrian, and Belgian manufacturers to get together. Competition has forced prices to disastrously low levels. Progress toward the formation of an entente is slow as two of the largest manufacturers in Belgium refuse to join the association.

British Export Prices on Lower Level

LONDON, June 16.—(*European Staff Service*)—Board of Trade returns for April, 1926, give average British export prices per gross ton for certain iron and steel products, compiled from actual contracts made several months ago. This accounts for the difference between these quotations and the base prices regularly quoted in our columns.

The following table shows the price of each of the seven principal commodities exported from Great Britain. Except for beams, all prices, in comparison with those prevailing in the corresponding period of last year and those which were registered in March, 1926, have dropped.

The price of foundry pig iron was about 16s ($3.90) less than in April, 1925 and 1s 3d ($0.30) less than in March this year. Carbon billets were £8 2s ($39.25) less than in April, 1925, and about £3 ($14,60) less than in March, 1926. Beams were about 2s 6d ($0.61) higher than in April, 1925, and £2 18s ($14.10) more than in March, 1926. Galvanized sheets were 18s ($4.35) less than in April, 1925, and 10s ($2.42) less than in March this year. Tin plate was £2 18s ($14.10) less than in April, 1925, and 2s ($0.48) less than in March, 1926. Plates were about £1 15s ($8.50) less than in April, 1925, and about 13s ($3.40) less than in March, 1926.

	£	s	d	$
Foundry pig iron	4	0	4	19.55
Ferroalloys	10	9	6	51.00
Carbon billets	11	13	0	56.00
Beams	10	11	0	51.10
Galvanized sheets	18	4	0	88.20
Tinplate	21	1	0	102.20
Plates	9	4	9	44.75

French Foreign Trade Less Satisfactory

PARIS, June 14.—(*European Staff Service*)—Returns of French foreign trade for April show that imports of pig iron were 2026 metric tons, against 3236 tons in March. Imports of steel were 17,197 metric tons, compared with 16,686 tons in March. Both March and April steel import figures were higher than the monthly average of 1925, which was about 11,700 tons.

Exports of pig iron in April totaled 55,854 metric tons, against 56,445 tons in March. Exports of steel were 260,-176 metric tons, compared with 259,-032 tons in March. Since the beginning of this year, exports of steel have been somewhat under the monthly average of 1925 which was 272,270 tons. The following table gives figures for the first four months of 1926, compared with the monthly averages of the three preceding years, in metric tons:

Monthly average	IMPORTS Pig iron	IMPORTS Steel	EXPORTS Pig iron	EXPORTS Steel
1923	5,305	55,495	49,320	153,990
1924	3,540	56,780	63,900	187,380
1925	2,693	11,703	58,855	272,270
1926				
Jan.	2,657	6,906	64,888	266,471
Feb.	2,244	6,996	68,487	253,322
Mar.	3,236	16,686	56,445	259,032
Apr.	2,026	17,197	55,854	260,176

Industrial Business Changes

PLANT of the former Dalton Mfg. Co., manufacturer of lathes, at Sound Beach, Conn., has been sold to the Magazine Repeating Razor Co., New York. The purchaser will transfer its facilities for the manufacture of razor blades from its present leased plant in Newark, N. J. The Dalton line of lathes was taken over about two years ago by the Dalton Tool Corp., with plant at 82 Willow street, New York.

* * *

Butts & Ordway Co., iron, steel and hardware, has consolidated its former plants at 44 Stanhope street, Boston.

* * *

Superior Boiler Works, Marion, Ind., sheet metal specialties, has changed its name to Superior Body Corp.

* * *

Grand Rapids Blow Pipe & Dust Arrester Co., Grand Rapids, Mich., has changed its name to the Newcomb-David Co.

* * *

Self-Lock Nut & Bolt Co., East Syracuse, N. Y., has changed its name to Self-Lock Screw Products Co.

* * *

Austin Co., Cleveland, has removed its Detroit office from the First National Bank building to the General Motors building.

* * *

Hills-McCanna Co., 2025 Elston avenue, Chicago, has opened a sales office at room 704, 53 Park place, New York, in charge of F. R. Glenner.

* * *

Rotar Engineering Works, Chicago, has changed its name to Rotor Engineering Works. Alvin E. Stein, First National Bank building, is manager.

* * *

Terre Haute Grinding Machine Co., Terre Haute, Ind., has been taken over by J. A. Shelburne, manager, who has bought out all other interests in the company.

* * *

Sullivan Machinery Co., Chicago, has moved its sales office at Knoxville, Tenn., from 614 Market street to 611 General building, 623 Market street, where larger quarters are available. E. L. Thomas is in charge.

* * *

The Floranain Equipment Co. has moved its offices from 110 West Fortieth street, to the Foundation building, 120 Liberty street, New York City.

* * *

National Supply Co., Toledo, O., has opened a sales office at 211 McCrea street, Indianapolis, with a stock of machine tools and supplies.

* * *

Union County Iron Works, Elizabeth, N. J., has moved from 644 Franklin street to 533 Third avenue, where larger quarters are available.

* * *

Truscon Steel Co., Youngstown, O., has moved its Boston offices from 147 Summer street to 260 Tremont street. G. J. Meyer is manager.

* * *

Whitney-MacDonald Inc., 2320 East Tioga street, Philadelphia, has changed its name to the MacDonald Corp. It manufactures power plant pipe and fittings.

* * *

Buck, Kaier & Co. Inc., 9 East Forty-sixth street, New York, has been formed to take over the fluorspar importing business formerly conducted by L. J. Buck at that address.

* * *

American Broach & Machine Co., Ann Arbor, Mich., has appointed the George O. Desautels Co., 335 Postal Station building, its representatives in Indianapolis, Ind., and surrounding territory.

* * *

Milwaukee Crane & Mfg. Corp., Milwaukee, electric traveling cranes and hoists, has appointed W. C. Lloyd, 913 Empire building, Pittsburgh, its representative in that district.

* * *

Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., has moved headquarters of several executives to New York. Among them are M. B. Lambert, transportation sales manager, G. H. Froebel, central station sales manager, and Bernard Lester, assistant to the industrial sales manager.

* * *

Waldo, Egbert & Maltby Inc. is the name adopted by Waldo, Egbert & McClain Inc., Buffalo, N. Y., dealer in pig iron, coke, alloys, and steel, following the recent accession of George A. Maltby to the firm.

* * *

Beans Ltd. is the name of the company at Dudley, England, formerly known as A. Harper Sons & Bean Ltd. The company is controlled by Hadfield's Ltd., Sheffield, Eng., is a manufacturer of automobiles.

* * *

Miller Iron & Steel Co., 610 Vliet street, Milwaukee, Wis., has been incorporated under the same name with $25,000 capital. Herman Miller, Morris Miller and Michael Sadek remain the controlling stockholders.

* * *

Caufman & Clough Mfg. Co., 413 East Thirteenth street, Wilmington, Del., has changed its name to the Wilmington Pattern Co. It produces special machinery, wood and metal patterns and gray iron castings.

* * *

Toch Bros., 320 Fifth avenue, New York, have changed name to Standard Varnish Works & Toch Bros. Inc. and have removed to 443 Fourth avenue. The company manufactures metal protective paints and rust preventives.

* * *

Johnson & Field Mfg. Co., Racine, Wis., manufacturer of seed-cleaning machinery since 1876, has been bought by the S. Howes Co., Silver Creek, N. Y., which is moving the business thither. The plant at Racine probably will be sold.

* * *

L. D. Rockwell Co., representative in the Cleveland district for the Mansfield Sheet & Tin Plate Co., Mansfield, O., Interstate Iron & Steel Co., Chicago, Ashtabula Sheet Steel Co., Ashtabula, O., Delaware Seamless Tube Co., and other iron and steel manufacturers, has moved its offices from 2002 Union Trust building to 1008 Keith building, Cleveland.

Machinery

Equipment Business Shows Renewed Life—Volume Better Than to Be Expected at This Season—Inquiries Slowing Up

IMPROVEMENT in buying of machine tools and equipment appears characteristic for all markets during the last week. Inquiries are only fair and in many cases disappointing. Nevertheless, dealers report that business is better than one year ago and above average for this season of the year. Railroad purchases have been stimulated by the recent exhibition in Atlantic City, this being particularly true in New York and Chicago. Chief in industrial inquiry is the list of Westinghouse Electric & Mfg. Co. for its third quarter requirements. The inquiry calls for almost 50 various types of equipment. Illinois Central has purchased about half the equipment on its recent list. Used equipment continues in good demand. The crane market, however, is sluggish.

New York, June 22.—Notwithtsanding fair inquiry, orders in the local district over the past few days have been scattered. Even so, sellers assert trading is better than is usually to be expected at this season. Among the more active purchasers at the recent exhibit in Atlantic City was the Missouri Pacific, which closed on eight or ten various machines. Louisville & Nashville is inquiring for a 22-inch engine lathe. Included in recent automotive buying are a gear tester, a vertical shaper and a die sinker, all for various Detroit concerns and placed with the Pratt & Whitney Co. This manufacturer also has closed on a 16-inch geared-head lathe for a Detroit manufacturer; a 20-inch geared head lathe, a bench lathe and a bench drill for a steel foundry in Indiana Harbor, Ind.; and six automatic lathes for a twist drill manufacturer in New Bedford, Mass. This builder also has booked a vertical shaper for a Rock Island, Ill., concern; a die sinker for a railroad in Nebraska; a vertical shaper for a railroad in Kentucky, and an automatic miller for a St. Louis company.

Boston, June 22.—Automobile manufacturers have been heavy buyers of tools in Connecticut during the last week. Chief of these were the Ford Motor Co. and the Chevrolet Motor Co. Foreign interests also have been buying in Connecticut so that the present producing market is active. Sales within the district although in moderate volume are running well ahead of May, and the record to date is appreciably higher than for the same period in 1925. Boston & Albany recently purchased four or five tools closing its list of about 30. General Electric Co. also has been buying during the week. Several machine tool manufacturers in the district have bought tools.

Pittsburgh, June 22.—Splendid inquiry rate and a fair buying rate characterize the machine tool and equipment market in the greater Pittsburgh area. The list of Westinghouse Electric & Mfg. Co. for third quarter requirements of its East Pittsburgh works, as mentioned last week and lists for its other shops are expected. This list involves between 40 and 50 items, including milling machines, lathes, hammers, radial drills, high-speed drills, tool grinders, slotters, planers, twist drill grinders, filing machines, saws, etc. Another list from a large nearby tubular products mill involves about 12 items. Many other inquiries for one or two tools apiece likewise are being received and one interesting inquiry calls for four special machines. Sales lately have been confined for the most part to one or two items apiece. Crane sales lately have been few but some items are pending on which action will be taken shortly. Additional mill equipment and several hammers have been ordered by Carnegie Steel Co. for Homestead works from Morgan Engineering Co. and other builders.

Chicago, June 22.—Sales of machine tools here are good, mostly to railroads. New inquiries are less satisfactory, industrial interest being particularly slack. Indications are that the first half of 1926 will exceed slightly the same period last year. June so far exceeds May. Heavy mill machinery is in a slump at present, most large programs having been fulfilled for the time being. Railroad buying continues. About half the Illinois Central list has been completed, while some tools remain to be purchased by the Santa Fe and the Chicago & North Western. Deliveries are fairly prompt. Industrial crane activity is slow, one overhead crane builder having received not a single inquiry in over a week. Both used machine tools and cranes are in demand. Several road constructors are seeking to rent cranes.

Cincinnati, June 22.—A majority of the machine tool builders in this district report a better volume of inquiries, particularly from the railroads. Sales the past week, were on a larger scale, but in most instances involved single units. General manufacturers also are more active in the market. Builders of machine tools are not anticipating any marked activity for the next couple of weeks. They contend that the summer period undoubtedly will keep down buying on a representative scale. Dealers in used equipment reported a fair volume of business.

Cleveland, June 22.—Both dealers and manufacturers report sales during the current month as better than expected. In some cases, June will prove to be the best month of the year if orders are received at the present rate. Inquiries are not so good, nevertheless, dealers expect business fo rthe next two months to be better than the usual summer business for the next two months to be models shortly is expected to supply the demand for new shop equipment. White Motor Co., Cleveland, has just added four new tools to its equipment and the Chevrolet Motor Co., Detroit, has just purchased additional items, accounting for about half its list.

CRANE ORDERS PLACED

Overhead cranes for a company in western New York to Niles Crane Corp.; it is reported they are for a power plant at Niagara Falls, N. Y.

Three cranes, including two 10-ton and one 15-ton, to three different manufacturers in Pittsburgh district, to Shaw Crane Works through Manning, Maxwell & Moore Inc.

Among single orders were: 175-ton ladle crane for Upson works of Bourne-Fuller Co., Cleveland, to Alliance Machine Co.; 10-ton crane for Olean, N. Y., shops of Pennsylvania railroad to Shaw Crane Works through Manning, Maxwell & Moore Inc.; 25-ton locomotive crane for Public Service Corp. of New Jersey, Newark, N. J., to American Hoist & Derrick Co.; logging crane for New Mexico Lumber Co., New Mexico, to American Hoist & Derrick Co.; 5-ton 2-motor crane for stone yard, Brooklyn, N. Y.; to New Jersey Foundry & Machine Co.; used crane for McKoewn Bros. Co., Chicago, to unnamed seller; 20-ton crane trolley for M. W. Kellogg Co., Jersey City, N. J., to unnamed builder; 30-ton caterpillar crane for United States Gypsum Co., Chicago, to Orton Crane & Shovel Co.; 12-ton locomotive crane for Hanlon-Gregory Galvanizing Co., Pittsburgh, to Orton Crane & Shovel Co.; gantry crane for Western Electric Co., Chicago, to unnamed builder; 30-ton locomotive crane for Thunder Bay Paper Co. Ltd., Canada, to Browning Crane Co.

CRANE ORDERS PENDING

Six overhead cranes for West Philadelphia, Pa., plant of General Electric Co.; action expected shortly.

Two 10-ton handpower cranes for Honolulu Iron Works, Woolworth building, New York; bids asked.

Cranes for Weirton Steel Co., Weirton, W. Va.; action expected soon.

Cranes for new river rail terminal, Cincinnati River Rail terminal, Cincinnati; formal inquiry expected soon.

Overhead crane for Queensboro Gas & Electric Co., Jamaica; pending.

Electric overhead crane for New York Steam Co., for installation at a power plant to be erected at Thirty-fifth street and First avenue, New York. Thomas E. Murray, Duane street, New York, is engineer in charge.

Places Reduction Sets

Pittsburgh, June 21.—In addition to the order for four 30 x 44-inch hot sheet mills, two 30 x 44-inch roughing mills, and six 26 x 50-inch cold mills recently received from Suzuki & Co., New York city, by the National Roll & Foundry Co., Avonmore, Pa., for the account of the Kawasaki Dockyard Co., Kobe, Japan, the order calls for one 1200-horsepower gear reduction drive for the hot mills and one 350-horsepower gear reduction drive for the cold mills.

Construction and Enterprise

Concise and Timely Business Building Opportunities from the Field of Industry

Where additional information is presented, reference is made to date of issue in which previous item appeared.

GADSDEN, ALA.—Stringer Bros. Inc. has bought a site and will build a foundry with 40,000 square feet floor space for manufacture of soil pipe. C. C. Stringer and A. E. Stringer are owners.

LITTLE ROCK, ARK.—Southwestern Bell Telephone Co. has bought a site at Seventh street and the Rock Island railroad and will build a warehouse, garage and storage yard.

LOS ANGELES—Pike Auto Trailer Works, 701 East Seventh street, is building a 1-story shop 40 x 200 feet at Twenty-sixth street and Santa Fe avenue.

OAKLAND, CALIF.—Oakland Steel Foundry, Ford and Peterson streets, has been organized by F. E. Done, 1505 Santa Clara avenue, Alameda, and will build a foundry 180 x 200 feet, equipped with 1½-ton electric furnace.

HARTFORD, CONN.—Royal Typewriter Co. will build a 2-story addition, 95 x 210 feet. Greenwood & Noerr, Hartford, are engineers.

WATERBURY, CONN.—The General Brass Corp. has been organized. Arnold R. Rasmussen is president and treasurer. Other officers of the company are Rocco DiOrio, vice president and Floyd H. Rasmussen, all of Waterbury.

AUGUSTA, GA.—Lightning Hoist & Grapple Co., J. P. Doughty Jr. president, has been incorporated and is equipping a plant for the manufacture of a device for loading and unloading automobiles from freight cars.

CHICAGO—Pielet Scrap Iron & Metal Co., 1257 Blue Island avenue, Samuel Pielet, president, will build a 2-story shop and office building 20 x 54 feet.

CHICAGO—Symons Clamp & Mfg. Co., 4249 Diversey avenue, A. Symons, president, has let contract to the Austin Co. for a 1-story plant 101 x 116 feet.

CHICAGO—Chicago Pneumatic Tool Co., 572 West Randolph street, is considering plans for a 2-story plant 50 x 157 feet. A. Epstein, 2001 West Roosevelt road, is engineer.

CHICAGO—Cabranette Corp., 308 North Michigan avenue, J. J. Werner, manager, has awarded a contract to P. H. Lorenz Co., Moline, Ill., for its plant at Michigan City, Ind.

CHICAGO—Goodman Mfg. Co., 4800 South Halsted street, manufacturer of mining machinery, will build a 1-story addition 20 x 100 feet. L. E. Ritter, Marquette building, is architect.

CHICAGO—Nice Sanitary Mfg. Co. has been incorporated with $1050 capital to manufacture metal specialties by Charles E. Fischer, Charles T. Funk and John P. McIntyre. Fischer Machine Works Co., 1841 Carroll avenue, is correspondent.

CHICAGO—Ornamental Iron Products Co., 105 West Monroe street, has been incorporated with $5000 capital to manufacture wrought iron lamps, furniture and fixtures by Nathan Spiro, Sidney A. Alexander and Theodore A. Stiffel. Samuel Berenbaum, 105 West Monroe street, is correspondent.

COAL CITY, ILL.—Somerville Machine Co. is considering plans for rebuilding its burned plant.

DECATUR, ILL.—Wabash railroad will build an addition to its main shop of the reclamation plant at the car department, 50 x 145 feet, doubling its size.

PEORIA, ILL.—Peoria Auto Body Co. has given contract to Tapping & Shrum, 309 South Jefferson street, for a 2-story service, repair and garage building. John Fried is general manager.

INDIANAPOLIS—Thomas J. Greene & Co., 202 Miley avenue, Thomas J. Green, president, is building an extension for office and manufacturing purposes, two stories, 82 x 90 feet.

WINCHESTER, IND.—Cook Bros. Foundry Co. is having plans sketched for a gray iron foundry 50 x 80 feet for construction in fall or spring.

TOPEKA, KAN.—Steel Fixture Co., Harry K. Brooks, manager, is having preliminary plans made for a plant and warehouse.

MAYSVILLE, KY.—Ohio Valley Pulley Co. is building a 1-story plant addition 60 x 300 feet.

BALTIMORE, MD.—Maryland Meter Works, Guilford avenue and Saratoga street, manufacturer of water meters, will build a 6-story plant 110 x 164 feet.

BALTIMORE—Non-Explosive Receptacle Co. has been incorporated with $100,000 capital to manufacture metal cans and containers by Sidney S. Weil, 4800 Brightwood avenue, and associates.

BOSTON—Concordia Co. Inc. has been incorporated with $90,000 capital to establish laboratories for development of mechanical and chemical processes by Llewellyn Howland, president, 31 State street, Boston, and L. E. Monahan.

BOSTON—Haslam, Ward & Russell Inc. has been incorporated with $10,000 capital to manufacture machinery and equipment by Frederick G. Guild, president, Frederick C. Haegis, 50 Federal street, Boston, and Leeds A. Wheeler.

BOSTON—International Gypsum Co. has been incorporated with $300,000 capital to mine and manufacture gypsum at Cape Breton, N. S., by Irving Fielding, 98 Oxford road, Newton Center, Mass., C. Atkinson and Thomas S. Mahoney.

BOSTON—Stahleker Steel Corp. has been incorporated with $50,000 capital and 1000 shares no par value to manufacture metal products by B. Atwood Robinson, president, and Wallace Blanchard, 19 Congress street, Boston.

CAMBRIDGE, MASS.—Contract has been awarded the S. C. Sperry Co., Cambridge, Mass., for a 3-story and basement 50 x 75 foot brick, steel and concrete extension to the office building of Lever Bros.

FITCHBURG, MASS.—Guay Inc. has been incorporated to manufacture electrical machinery and appliances with $5000 capital by Victor Guay, Harvey E. Guay and Ernest A. Guay.

QUINCY, MASS.—Globe Wire Co. has been incorporated with $20,000 capital to manufacture wire products by Philip R. Allen, president, 12 South Central terrace, Quincy; Hilda R. Weil, treasurer, and Raymond P. Delano.

QUINCY, MASS.—Sprague Specialties Co. has been incorporated to manufacture devices for transmission of power, with $25,000 capital and 1000 shares no par value by Robert C. Sprague, president and treasurer, 8 Miller State road, and William J. Nolan.

WORCESTER, MASS.—Moroney Commercial Body Co. has had plans made for a 1-story plant 50 x 65 feet at Shrewsbury, Mass.

WORCESTER, MASS.—Wyman & Gordon Co., 105 Madison street, is rebuilding its forge shop 28 x 100 feet.

BAY CITY, MICH.—Gibb Welding Machine Co. is building an addition to more than double production facilities.

DETROIT—Wolverine Tube Co., 1411 Central avenue, has let contract to Everett L. Jones, Inc., 1901 Washington boulevard, for 2-story addition.

DETROIT—Jury Metal Arts Co. has been incorporated with $5000 capital to manufacture metal devices by Robert E. Jury, 9371 Mendota street, William B. McKay and Grace N. McKay.

DETROIT—Detroit River Subways Co. has been incorporated to build tunnels and railway lines, with $1,000,000 capital, by John A. Murray, 30 Whitney avenue, Detroit, Thomas Henry Radhouse and Frank G. Engholm, Toronto, Ont.

FORDSON, MICH.—Universal Products Co., J. B. Flick, president, 458 East Woodbridge street, Detroit, has let contract to J. M. Hoffman Construction Co., Furniture building, Evansville, Ind., for a 2-story plant 40 x 80 feet for the manufacture of automobile parts.

GRAND RAPIDS, MICH.—Grand Rapids Septic Tank Co. has been incorporated with $20,000 capital to manufacture septic tanks by Terry J. Hills, Peter Van Doorne and Charles H. Travis, Grand Rapids.

HILLSDALE, MICH.—Richards Bros., Die Works, 1560 East Milwaukee avenue, Detroit, is planning a plant at Hillsdale.

PONTIAC, MICH.—Yellow Coach Mfg. Co., John A. Ritchie, president, 5801 Dickens street, Chicago, is considering plans for a plant here on Grand Trunk railroad.

JOPLIN, MO.—East Joplin Foundry Co., 1201 North street, Dewey Reed president, will rebuild its burned plant.

KANSAS CITY, Mo.—Field Hardware Mfg. Co., F. Stanley Field, manager, 111 East Thirty-first street, has let contract to Woods Bros. Corp., Security building, for a 1 and 2-story plant 90 x 123 feet.

KANSAS CITY, MO.—Southwestern Bell Telephone Co., Carl A. Uffers, general manager, Telephone building, Kansas City, is having sketches made for a repair shop, warehouse and garage on Roanoke road near Thirty-fifth street.

Where American Machinery Exports Went in April

Number

	Lathes			Drills				Gear Cutters	Pneumatic Portable Tools	Planers	Shapers and Slotters	Metal Sawing Cutting	Milling Machines Knee and Column	Other
	Engine	Turret	Other	Vertical	Radial	Sensitive	Other							
Austria	1	..	..	..	1	..	..	..	..	..	..	..	..	..
Belgium	..	..	..	..	..	..	..	..	6	..	..	..	..	3
Russia	..	..	..	..	..	..	26	..	..	..	..	..	10	5
France	..	3	1	1	..	..	..	4	260	..	7	..	..	4
Germany	..	1	1	..	..	18	..	..	69	..	1	1	..	32
Italy	..	1	3	16	..	..	216	1	211	..	1	..	..	3
Netherlands	..	..	..	..	1	..	..	..	5	..	4	..	..	1
Spain	..	1	..	..	..	..	..	..	25	..	..	..	..	..
Sweden	1	..	..	..	..	..	1	..	1	..	..	..	4	1
United Kingdom	..	1	13	..	..	1	3	4	363	..	4	..	82	22
Canada	4	3	9	5	1	1	13	4	144	109	3	3	1	1
Costa Rica	..	..	..	1	..	..	1	..	..	..	..	..	..	..
Mexico	1	..	6	2	..	..	27	2	186	..	4	1	..	..
Cuba	1	1	..	..	..	..	1	..	364	..	1	1	..	..
Argentina	..	..	..	..	..	..	5	..	1	..	..	..	..	..
Colombia	..	..	1	2	..	1	..	..	208	..	1	2	..	..
Brazil	10	..	..	..	..	..	2	..	104	..	..	1	..	..
British India	1	..	..	..	1	..	..	..	104	..	..	..	1	..
China	..	..	..	..	..	..	2	..	..	..	..	..	..	..
Japan	..	..	2	..	1	1	..	..	68	..	1	..	..	..
Philippine Is.	1	..	..	..	..	..	..	..	..	1	2	6	..	..
Australia	..	..	..	..	..	..	..	1	162	..	..	..	..	1
New Zealand	..	..	1	..	..	10	..	..	2	..	..	..	..	..
British S. Africa	..	..	2	..	1	..	3	..	85	..	3	1	..	1
Other countries	3	..	2	1	1	2	14	..	76	1	1	3	6	1
Totals, April	25	11	41	28	7	34	314	16	2,458	111	33	19	104	75
March	6	9	75	46	5	122	92	22	1,268	..	34	16	14	43

ST. LOUIS—Simplicity Oil Burner Co. has been incorporated by John M. Ferguson, 828 Clark street.

ST. LOUIS—Stinson Adding Machine Co., 321 South Grand avenue, will build a 2-story addition 60 x 245 feet. C. L. Thurston, 130 Kenilworth street, Webster Groves, Mo., is architect.

HASTINGS, NEBR.—Roth Mfg. Co., manufacturer of automobile equipment, G. A. Roth president, will build a 1 and 2-story plant, 100 x 100 feet.

DOVER, N. J.—Foundry Efficiency Corp. has been incorporated with 500 shares no par value to manufacture machinery by Charles H. MacFall, Edward W. Collins and Jacob Singerman, Dover. Rabe, Keller & Davis, New York, are attorneys.

IRVINGTON, N. J.—Schroeder Sheet Metal Works has been incorporated with $50,000 capital to manufacture sheet metal products by Irving Schroeder, and Matilda Schroeder, Irvington and George I. Schroeder, East Orange. W. F. Wriggins, Newark, is attorney.

JERSEY CITY, N. J.—Stillman's Automatic Sign Co. has been incorporated with $125,000 capital to manufacture advertising signs and metallic novelties by George J. Stillman, William Beiser, Matilda G. Stillman, Jersey City. George J. Stillman, Jersey City, is attorney.

NEWARK, N. J.—Russell Schwartz Co., 109 Frelinghuysen avenue, manufacturer of metal cabinets, will build a plant at 56 Earl street.

NEWARK, N. J.—American Safety Signal Corp. has been incorporated with $40,000 capital to manufacture safety signal devices by Eugene S. Mayer, Harry A. Moore and H. Cohen, Newark. Isadore Stern, Newark, is attorney.

TRENTON, N. J.—American Electric Porcelain Co. has been incorporated with $100,000 to manufacture porcelain-making appliances by Jan Janusz, Jan Baginski and Wojceich Zak, Trenton. E. L. Katzenbach, Trenton, is attorney.

BAY SHORE, N. Y.—South Shore Engineering Co. has been incorporated with 1000 shares no par value to do dredging work, by P. L. Housel, F. Wells and M. S. Smith. Robbins, Wells & Housel, Bay Shore, are attorneys.

BROOKLYN—Philip H. Gill & Sons, Lorraine and Cramer streets, will rebuild burned portions of their machine shop.

BROOKLYN, N. Y.—Schaeffer & Hermanns Co. has been incorporated with $10,000 capital to do metallic plating, by C. Schaeffer, E. Hermanns and J. Kimmelman. H. Weil, 299 Broadway, is attorney.

BROOKLYN—Pioneer Instrument Co. has been incorporated with $25,000 capital and 9 shares no par value to manufacture instruments by M. M. Titterington, B. H. Goldsborough and C. H. Colvin. Greenbaum, Wolff & Ernst, 285 Madison avenue, New York, are attorneys.

BROOKLYN, N. Y.—Alma Motors Corp. has been incorporated with $1,000,000 capital and 10,000 shares no par value to manufacture engines by J. Albert, E. S. Cameron and M. Marsa. Watson, Godley, Sheppard & Willgus, 280 Broadway, New York, are attorneys.

BUFFALO—Atlas Steel Casting Co., 1963 Elmwood avenue, is considering plans for rebuilding its burned pattern shop.

BUFFALO—William H. Barr has been incorporated to manufacture brass castings with $100,000 capital and 3000 shares common no par value by W. H. Barr, W. L. Marcy and W. F. Hagedorn. Moot, Sprague, Brownell & Marcy, Buffalo, are attorneys.

NEW YORK—Electric Machine & Elevator Co., 448 East 148th street, will rebuild burned portion of its plant.

NEW YORK—A power plant will be erected by the New York Steam Co. at First avenue and Thirty-fifth street. The steel erection contract has been placed with Post & McCord.

NEW YORK—Puritan Electric Circuit Breaker Corp. has been incorporated with $250,000 capital by C. D. Maxwell and C. H. Suhl. W. T. VanAlstyne, 128 Broadway, is attorney.

NEW YORK—Trezza Metal Stamping Co. has been incorporated with $12,000 capital by P. Guagliano, F. Saudino and M. Simowitz. R. Barke, 51 Chambers street, is attorney.

NEW YORK—Apex Brass & Bronze Works has been incorporated with $5000 capital by D. Hyman and E. Buchman. G. J. Brownstein, 186 Joralemon street, Bronklyn, is attorney.

NEW YORK—Valegreen Art Metal Works has been incorporated with $10,000 capital by G. Valentino, G. Korngreen and S. Costa. J. R. Levy, 367 Fulton street, is attorney.

NEW YORK—Economy Oil Heating Co. has been incorporated with $10,000 capital to manufacture oil burners by L. Lesselbaum and A. C. Joffe. W. W. Lesselbaum, 42 Broadway, is attorney.

NEW YORK—Agazy Sandbast Cleaning Co. has been incorporated with $5000 capital to operate a sandblast business by I. Schwartz, B. Bernstein and P. Cutler. S. J. Cutler, 50 Court street, is attorney.

NEW YORK—Maine-Forman Corp. has been incorporated with $25,000 capital to manufacture mill equipment by A. E. Forman, J. E. Kerby and P. T. Kaine. J. J. Sullivan, 140 Nassau street, is attorney.

NEW YORK—Time Control Co. has been incorporated with $25,000 capital to manufacture timing devices by J. S. Rowan, H. Charboneau and H. W. Campbell. L. Ougst, 66 Broadway, is attorney.

NEW YORK—Economy Electric Meter Co. has been incorporated with $15,000 capital by L. Fischer, M. Horowitz and A. M. Robertson. F. Fischer, 51 Chambers street, is attorney.

NEW YORK—Permatype Record Writing Machine Corp. has been incorporated with $50,000 capital and 500 shares no par value by R. Smith, S. Katz and M. Salpeter. P. Goldfarb, 302 Broadway, is attorney.

NEW YORK—New York Brass Turning Co. has been incorporated with 1000 shares no par value and $100,000 preferred by S. Sanberg, H. Greenblatt and H. Vogel. Morrison & Schiff, 320 Broadway, are attorneys.

NEW YORK—L. W. Jones Tool Co. has been incorporated with $5000 capital to manufacture hardware by J. Hurowitz, L. J. Greenberg and M. S. Rachmil. P. Wellins, 2382 Grand Concourse, is attorney.

NEW YORK—John R. Ketcham has been incorporated with $9000 capital to manufacture hoisting machinery by E. M. Wood and M. L. Bowers. J. B. Ketcham, 308 West Twentieth street, is attorney.

NEW YORK—A power house is included in plans for a housing development along the East river, between Fortieth and Forty-fourth streets for the Prospect Hill Corp., which is sponsored by the Fred F. French interests.

NEW YORK—Leroi Engine Service Corp. has been incorporated with 100 shares no par vaue by W. E. Godfrey, A. H. Marx and R. Kaufman. Godfrey & Marx, 42 Broadway, are attorneys.

NEW YORK—Ballard Interstate Corp. has been incorporated with 200 shares no par value to manufacture oil burning equipment by G. V. Reilly, S. C. Wood and H. C. Hand. White & Case, 14 Wall street, are attorneys.

NEW YORK—Gas-O-Mizer Corp. of New York has been incorporated with $20,000 capital to manufacture gasoline saving appliances by S. W. Neuberger and V. M. Dunn. D. M. Neuberger, 154 Nassau street, is attorney.

NEW YORK—Trudy Mfg. Co. has been incorporated with $250,000 capital to manufacture dispensing machinery by N. Roven, A. Fromm and E. Levine. M. M. Baker, 233 Broadway is attorney.

NEW YORK—Gasser & Sons have been incorporated with $10,000 capital to do metal spinning by J. J. Gasser, J. A. Gasser and A. A. Gasser. F. T. Hayden, Richmond Hill, N Y., is attorney.

NEW YORK—B. & B. Seam Binding Machines Corp. has been incorporated with $6000 capital by W. Black, M. Barnett and P. Grossman. I Burnett, 350 Stone avenue, Brooklyn, is attorney.

NEW YORK—Federal Cutting Machine Exchange Co. has been incorporated with $10,000 capital to manufacture cloth-cutting machines by S. Levine and E. L. Freedman. L. Himmelfarbe, 358 Fifth avenue, is attorney.

NEW YORK—Potter Window Lock Corp. has been incorporated with $1000 capital to manufacture hardware devices by W. Potter, H. F. Rogers and A. M. Rogers. C. S. Fettreich, 56 Park Row, is attorney.

NEW YORK—D. & M. Construction Co. has been incorporated to fabricate steel with 200 shares no par value by J. Silverstein, A. J. McNulty and W. A. Reitman. M. Silverstein, 305 Broadway, is attorney.

NEW YORK—Abingdon Engineering Co. has been incorporated with $10,000 capital to manufacture tools and dies by L. Schulman and E. Schulman. R. Barko, 51 Chambers street, is attorney.

NEW YORK—Gauge Products has been incorporated with 1000 shares no par value to manufacture tank gages by G. Margolin, E. Margolin and E. Nightingale. F. W. Sperling, 27 Cedar street, is attorney.

NEW YORK—A. Tripodi Co. has been incorporated with $120,000 capital to manufacture hardware by A. Tripodi, J. Licata and E. Licata. J. Loscalzo, Corona, N. Y., is attorney.

NEW YORK—Superior Floor Surfacing Machine Corp. has been incorporated with $20,000 capital and 300 shares no par value by O. Best, G. Jacobson and G. E. Erickson. A. M. Higgins, 55 Liberty street, is attorney.

NEW YORK—Vermos Machine has been incorporated with $120,000 capital and 1000 shares no par value by J. O. Rodgers, I. H. Wise and O. Ostbye. F. White, 58 William street, is attorney.

NEW YORK—Magnus-Reel Electric Products Corp. has been incorporated with $50,000 capital and 500 shares no par value by H. S. Reel, M. M. Manheim and C. Manheim. Rosenblum and Summer, 2 West Forty-fifth street, are attorneys.

NEW YORK CITY—Structural steel for the Atlantic Coast Line shops, near Tampa, Fla., on which Dwight P. Robinson Co. Inc., 61 Broadway, are general contractors, has been awarded and bids on equipment are now being asked.

Refractories

FIRE CLAY BRICK

Per 1000 f.o.b. works

Pennsylvania, No. 1	$40.00 to 43.00
Pennsylvania, No. 2	35.00 to 38.00
Ohio, No. 1	40.00 to 43.00
Ohio, No. 2	35.00 to 40.00
Illinois, No. 1	40.00 to 43.00
Illinois, No. 2	35.00 to 38.00
Kentucky, No. 1	40.00 to 43.00
Kentucky, No. 2	38.00 to 40.00
Missouri, No. 1	40.00 to 43.00
Missouri, No. 2	35.00 to 38.00
Maryland, No. 1	43.00 to 47.00
Maryland, No. 2	39.00 to 42.00
Georgia and Ala. No. 1	40.00 to 45.00
Georgia and Ala. No. 2	30.00 to 35.00

SILICA BRICK

Pennsylvania	40.00
Chicago	49.00
Birmingham	48.00 to 52.00

MAGNESITE BRICK

Per Net Ton Seaboard Base

9 x 4½ x 2½	55.00

CHROME BRICK

(Per Net Ton)

9 x 4½ x 2½	45.00

NEW YORK—Layton-Shea has been incorporated to manufacture vats, tanks and chemical apparatus, with 1000 shares no par value by A. Butler, L. S. Popkin and W. W. Rashkin. Hirsh, Sherman & Limberg, 160 Broadway, are attorneys.

POUGHKEEPSIE, N. Y.—Barbarino Automobile Mfg. Co. has been incorporated with $600,000 capital to manufacture motor vehicles by D. Alvord, S. Barbarino and D. Storms. C. W. Harnold, Poughkeepsie, is attorney.

ROCHESTER, N. Y.—The Stromberg-Carlson Telephone Mfg. Co. has awarded steel for an addition.

ROCHESTER, N. Y.—Peerless Combustion Corp. has been incorporated with $200,000 capital to manufacture furnaces by O. Voight, C. Voight and J. Ellendt. D. L. Crowe, Rochester, N. Y., is attorney.

SCHENECTADY, N. Y.—The General Electric Co. has closed for steel for an addition to its plant here.

SCHENECTADY, N. Y.—The General Electric Co. will start work at once on a reinforced concrete test building at its local plant.

SYRACUSE, N. Y.—C. O. Reeps has been incorporated with 30 shares no par value to manufacture laundry machinery by S. F. Hancock, H. W. Clasen and C. R. Ryan. Hancock, Dorr, Sprigs & Shove, Syracuse, are attorneys.

CANTON, O.—Car Van Steel Products Co., W. S. Carnes, manager, 1212 Fifth street southwest, will build a 1-story addition 63 x 100 feet.

CANTON, O.—Gilliam Roller Bearing Mfg. Co. has been incorporated with $10,000 capital by J. F. Strough, William A. Brooke, Austin Lynch, James K. Lynch and N. E. Laggart.

CINCINNATI, O.—Royal Blue Bed Spring Co., W. Lathrop, president, Dempsey street, is having plans made for a 1-story plant and office building.

CINCINNATI—William Powell Co., 2521 Spring Grove avenue, manufacturer of valves and steam specialties, will build a 1-story foundry addition.

CINCINNATI—Wrightford Transmission Co. has been incorporated with 2000 shares no par value by George M. Morris, S. M. Blackburn, Raymond Ratcliff, Charles Rodner and Alfred K. Nippert.

CLEVELAND—Abrasive Machine & Foundry Co. has been incorporated with $100,000 capital by E. W. Hayden, L. L. Robertson, Joseph Lustig, E. J. Hinz and Merl H. Champ.

CLEVELAND—Rickersberg Brass Co., Emmanuel Rickersberg, president, Perkins avenue and East Thirty-seventh street, has let contract to the Van Blarcom Co., 606 National City building, for a new plant 120 x 236 feeet and 60 x 200 feet.

DAYTON, O.—C. W. Lang Tool Co. has been incorporated with $30,000 capital by C. W. Lang, V. F. Lang, M. M. Lang, and G. F. Holland.

TOLEDO, O.—Maumee Malleable Castings Co., P. H. Jones, president, Woodville street, has let contract to Compte-Nauman, 912 Summit street, for a 1-story addition 60 x 65 feet.

MARAMAC, OKLA.—Southern Rig & Reel Co. has been incorporated by D. C. Ryan and K. K. Ayers.

ALLENTOWN, PA.—Nassau Products Co. has been incorporated with $5000 capital to manufacture hardware and automotive specialties by Maurice W. Kern, 132 South Eighth street, Allentown, H. Stanley Welty and Harold A. Betz.

BOYERTOWN, PA.—The metal department of the Boyertown Burial Casket Co. was recently damaged by fire. The metal department building was relatively new and cost $150,000, exclusive of equipment.

CRAFTON, PA.—Auto Spring Control Co. has been incorporated with $20,000 capital to manufacture metal devices by Frederick C. Aston, 11 North Linwood avenue, Crafton, Pa., Chester A. Phillips and William H. Hughes, Pittsburgh.

ERIE, PA.—American Hollow Boring Co. is building a machine shop 65 x 130 feet to which it will move its present equipment and buy some additional. Old plant will be used for warehouse.

LAURELTON, PA.—Bids were opened June 12 on a municipal central heating plant.

PHILADELPHIA—Schneider Bowman Co. Inc., 1612 Van Dyke street, is building a 2-story foundry 100 x 100 feet.

PHILADELPHIA—Star Sprinkler Corp., Collins and Westmoreland streets, is equipping a plant to manufacture its sprinkler specialties.

PHILADELPHIA—A. E. Pausser, 1055 Locust street, will build a 2-story machine shop 45 x 60 feet.

PHILADELPHIA—Watson Stabilator Co., Walnut street bridge, manufacturer of shock absorbers is planning a new plant.

PHILADELPHIA — Bids have just been closed on a warehouse at Nicetown for the Mack Warehouse Co.

PHILADELPHIA—Atwater Kent Mfg. Co. King street and Roberts avenue, will build a 1-story sawtooth addition 225 x 515 feet.

PHILADELPHIA— Contract for a $30,000 foundry for Schneider Bowman, has been awarded to Paul Brosz, 2515 West Huntingdon street.

PHILADELPHIA—Contract has been awarded by the Philadelphia Rapid Transit Co., 820 Dauphin street, for $50,000 alterations to its car house at Taney and Gerard streets.

PHILADELPHIA—The Philadelphia Electric Co., has awarded a $90,000 contract to F. M. Harris & Co., 1520 Parrish street, for a substation at 52-54 North Sixth street.

PHILADELPHIA—C. H. Wheeler Mfg. Co., Sedgley avenue and Nineteenth street, has let contract to Robert Lamb Co., 843 North

Ninth street, for a 1-story machine shop.

PHILADELPHIA—Schneider Bowman Co. Inc., Louis Schneider, president, 1612 Van Dyke street, has let contract to Paul Brosa, 2511 West Huntingdon street, for a 1-story foundry 100 x 100 feet.

PHILADELPHIA—Contract for a $40,000 manufacturing building for the Soobar Co., Erderick street, North of Van Wirk, has been awarded to the Hughes-Foulkrod Co., Commonwealth building.

PHILADELPHIA—Contract for a $125,000 factory for the Bisbee Lindseed Co., Delaware avenue and Bigler street, has been awarded to John N. Gill Construction Co., 121 North Broad street.

PHILADELPHIA—Contract for a $61,000 manufacturing building and office for the John D. Driver Co., Fifty-sixth street and Lancaster avenue, has been awarded to the R. P. Whitney Co., Washington.

PHILADELPHIA—A contract for a manufacturing building for John J. Nesbitt Inc., ventilating systems, Rhawn and State road, has been awarded to the Bowden Construction Co.

PHILADELPHIA—Imperial Type Metal Co., 1220 North Howard street, manufacturer of printing supplies, has bought a site at Tioga street and Aramingo avenue and is planning construction of a new plant.

PHILADELPHIA—Contract for a $7000 machine shop for C. H. Wheeler & Co., Nineteenth street and Sedgley, has been awarded the Robert Lamb Co., 843 North Nineteenth street.

PHILADELPHIA—Contract has been awarded by the Manayunk Plush Mfg. Co. for a $70,000 mill building and power house, to C. N. Swartley & Son, 6135 Ridge street. The structures will be erected at Parker and Umbria streets.

PITTSBURGH—American Brake Shoe & Foundry Co., 505 Preble avenue, will build a 1-story foundry addition 43 x 45 feet and 29 x 39 feet.

READING, PA.—Reading Knob Works, Charles L. Heizman, president, is having plans made for a 1-story brass foundry 70 x 80 feet at Gregg and Angelica avenues.

YORK, PA.—The York Mfg. Co., ice and refrigerating machinery, will start work at once on a large manufacturing building. Steel for this project has been placed.

PROVIDENCE, R. I.—Ideal Foundry Co., 752 Eddy street, will build a 1-story foundry on Public street.

SAYLESVILLE, R. I.—The Lorraine Mfg. Co., woolen goods, has awarded structural steel for a building here.

LOCKHART, S. C.—Lockhart Power Co., operated by Monarch Mills Inc., will build a steam power plant to increase its output. W. D. Dent is general manager.

NASHVILLE, TENN.—Thomas Henry & Sons Inc., Philadelphia, is building a plant 120 x 500 feet and warehouse 100 x 200 feet at Centennial boulevard and Sixty-third street.

FORT WORTH, TEX.—Royal Mfg. & Welding Co. has been incorporated with $10,000 capital by John L. Burke, 1317 Madeline place.

HOUSTON, TEX.—Hughes Tool Co., Howard Hughes Jr. president, has let contract to Houston Structural Steel Co., Center and Yale streets, for a new plant 40 x 240 feet and an addition to the present plant.

HOUSTON, TEX.—Etie Sheet Metal Works, 1510 Washington street, has let contract to James M. West, 3002 North Main street, for a 2-story plant and office building 50 x 106 feet, at 1509 Washington street.

SAN ANTONIO, TEX.—Ardiff & LaNoue Inc has been incorporated to manufacture metal products by R. J. Ardiff and W. E. LaNoue.

WACO, TEX.—Barclay-Cooper Implement Co. has been incorporated with $25,000 capital by W. L. Barcley, I. H. Cooper and B. M. Busy.

NEWPORT NEWS, VA.—Approximately 70 acres of waterfront property, adjoining its terminals has been purchased by the Cheasapeake & Ohio railroad to provide future terminal facilities. Tentative plans were announced about two years ago, but the project was held up.

SEATTLE—Northwest Steel Rolling Mills has given contract to the Austin Co. for an addition for steel cutting and storage.

HUNTINGTON, W. VA.—Huntington Stove & Foundry Co., Dan A. Mossman president, First avenue and Twentieth street, is adding to its plant to enlarge production.

ASHLAND, WIS.—About $150,000 will be invested in remodeling the Northern Sulphite Mills here into a saw and planing mill for the Clubine Co. It will specialize in dimension stock for hardwood needs of furniture, automobile veneer door manufacturers. A complete sawmill and power plant and 12-compartment dry kilns will be erected and equipped.

MARINETTE, WIS.—Holland, Ackerman & Holland, engineers, 53 West Jackson boulevard, Chicago, are taking bids on the equipment of two hydroelectric generating plants at White Rapids and Clark Hill, near this city. The items include six generators and an equal number of turbines and governors. Bids for the construction of the plant close June 18.

MILWAUKEE—Seaman Body Corp. has let contract to Dahlman Construction Co., 456 Broadway, for a 5-story plant 100 x 175 feet.

MILWAUKEE—Northwestern Malleable Iron Co., 756 Park avenue, is planning to build an addition to its annealing plant 60 x 70 feet.

MILWAUKEE—A new plant costing about $35,000 will be built at 1376-1380 Thirty-first street by the Atlas Metal Parts Co., now located at 997 Fifteenth street.

NEENAH, WIS.—The board of education has selected John D. Chubb, architect, Chicago, to make the plans for the proposed new high school, which will cost about $500,000.

NEILLSVILLE, WIS.—Bids are being considered on a 250,000 gallon steel water tank for the local water works plant, being enlarged under the direction of J. H. A. Bratz, engineer, Builders Exchange, St. Paul, Minn.

PLATTEVILLE, WIS.—Russell Foundry Co. will build a 38 x 110 machine shop at Mineral and Water streets.

RACINE, WIS.—Standard Foundry Co. automobile and motor castings, Arthur R. Janes president, will build an addition and install electric furnace and cranes.

TWO RIVERS, WIS.—The Hamilton Mfg. Co., printing house furniture and fixtures, which is erecting additions costing about $800,000, is taking bids on two 350-horsepower boilers, stoker equipment, coal and ash handling equipment and other needs for an addition to the power plant. Lockwood, Greene & Co., Chicago, are the engineers in charge.

New Trade Publications

ELECTRIC HEATING—General Electric Co., Schenectady, N. Y., has issued a bulletin covering its heating equipment for industrial units. The heating unit and control are shown and typical installations indicate their use.

WELDING AND CUTTING—A catalog has been issued by the Alexander Milburn Co., Baltimore, Md. It is pocket size and covers the welding and cutting devices and parts manufactured by that company.

PNEUMATIC TOOLS—Warner & Swasey Co., Cleveland, has issued a bulletin covering its portable pneumatic tools, details of construction and application for various uses. It is well illustrated and covers much ground.

RIVETING—Craft advertising, emphasizing the advantages of a process, with a word for the implements that do efficient work to that end, is presented in a bulletin by the Hanna Engineering Co., Chicago. Locomotive and other railroad work, bridges and other steel construction demanding permanence are illustrated. The special riveters made by the company are shown and their action described.

RIVET FORGES—Means for heating rivets economically and efficiently are described in a bulletin by the Johnston Mfg. Co., Minneapolis, Minn. Details of the oil burner made by that company are given and various types of portable and stationary forges are illustrated.

COMPRESSORS—Belt-driven air compressors manufactured by the Sullivan Machinery Co., Chicago, are described in detail in a current bulletin by that company, well illustrated as to the compressors and parts, and their application to various sorts of service.

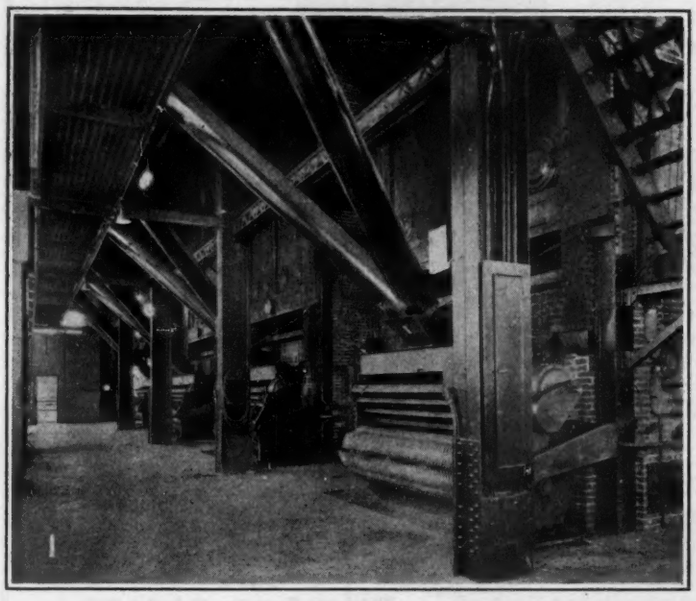
PNEUMATIC TOOLS—Chicago Pneumatic Tool Co., New York, has issued two circulars, one covering its universal drills, screw drivers, nut runners and tappers, the other a new type of grinder. The devices are illustrated and specifications given.

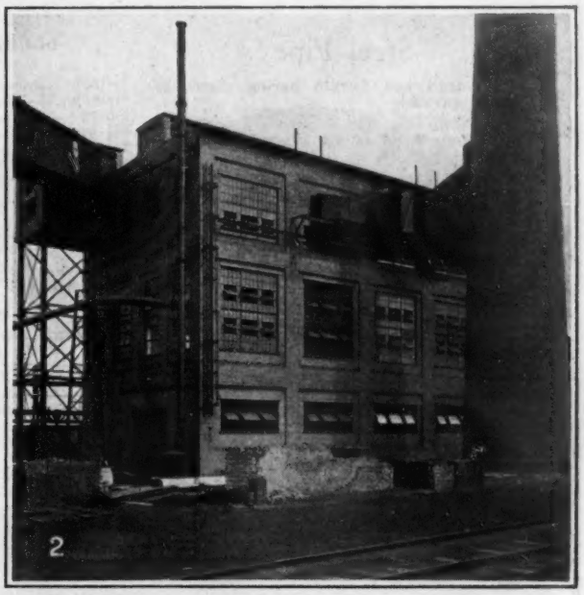
POWER FACTOR CORRECTION—Wagner Electric Corp., St. Louis, has issued a bulletin dealing with the experience of a large corporation in power factor correction by the consumer. Many data of value in computations of this sort are included.

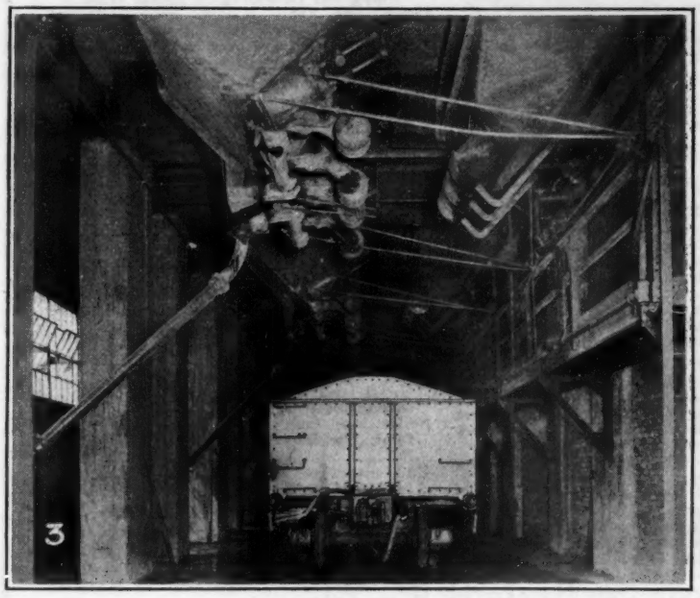
AIR FILTERS—An electrically operated means for drying and conditioning air for industrial and public buildings is presented in a bulletin by Drying Systems Inc., Chicago. Photographs of actual installations are shown and the advantages of electric control are presented.

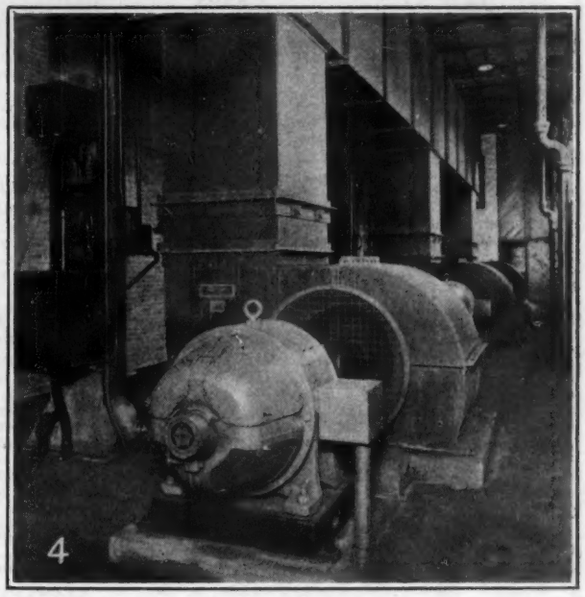
DRIVES—Machine tool drives form the subject of a booklet by the Link-Belt Co., Chicago, showing by text and illustration how chain drive for machine tools gives advantages over other methods. A number of machines using this type of drives are illustrated and described. A number of subjects of interest to machine tool manufacturers also are discussed, speed reduction, unrestricted center distances, working contact of teeth and tool maintenance costs.

INDUSTRIAL POWER PLANTS









Boiler Plant of By-Products Coke Corporation, Chicago. *Freyn-Design*

This Company has designed and constructed Industrial Power and Boiler Plants totalling in value over Twelve Million Dollars.

Let us work with you.

FREYN ENGINEERING COMPANY

Consultants — Engineers — Contractors

310 So. Michigan Avenue

CHICAGO

Discounts and Extras

Steel Pipe

Pittsburgh and Lorain basing discounts, jobber's carloads.

Evanston, Ill., and Indiana Harbor, Ind., take differential 2 points less discount or $4 per ton higher net.

Chicago takes differential 2½ points less than Pittsburgh-Lorain basis or $5 per ton higher net.

Butt Weld

	Black	Galvanized
⅛-inch	45	19½
¼ and ⅜-inch	51	25½
½-inch	56	42½
¾-inch	60	48½
1 to 3-inch	62	50½

Lap Weld

2-inch	55	43½
2½ to 6-inch	59	47½
7 to 8-inch	56	43½
9 and 10-inch	54	41½
11 and 12-inch	53	40½

REAMED AND DRIFTED

Butt Weld

1 to 3-inch	60	48½

Lap Weld

2-inch	53	41½
2½ to 6-inch	57	45½

EXTRA STRONG—PLAIN ENDS

Butt Weld

⅛-inch	41	24½
¼ and ⅜-inch	47	30½
½-inch	53	42½
¾-inch	58	47½
1 to 1½-inch	60	49½
2 to 3-inch	61	50½

Lap Weld

2-inch	53	42½
2½ to 4-inch	57	46½
4½ to 6-inch	56	45½
7 to 8-inch	52	39½
9 and 10-inch	45	32½
11 and 12-inch	44	31½

DOUBLE EXTRA STRONG

Butt Weld

½-inch	42	32½
¾ to 1½-inch	45	35½
2 to 2½-inch	47	37½

Lap Weld

2-inch	41	32½
2½ to 4-inch	43	34½
4½ to 6-inch	42	33½
7 to 8-inch	38	25½

(Note—Large jobbers obtain additional preferential discounts of 1 and 5 on black and 1½ and 5 on galvanized.)

Wrought Iron Pipe

Pittsburgh basing discounts, jobbers' carloads. Individual quotations made on delivered basis.

THREADS AND COUPLINGS

Butt Weld

⅛ and ⅜-inch	+11	+39
½-inch	22	2
¾-inch	28	11
1 to 1½-inch	30	13

Lap Weld

1¼ and 1½-inch	Upon application	
2-inch	23	7
2½ to 6-inch	26	11
8 to 6-inch	28	13
7 to 12-inch	26	11

PLUGGED AND REAMED

Two points less than above

EXTRA STRONG, PLAIN ENDS

⅛ and ⅜-inch	+19	+54
½-inch	21	7
¾-inch	28	12
1 to 1½-inch	30	14

Lap Weld

2-inch	23	9
2½ to 4-inch	29	15
4½ to 6-inch	28	14
7 to 8-inch	21	7
9 to 12-inch	16	2

DOUBLE EXTRA STRONG

Butt Weld

½-inch	+47½	+59½
¾-inch	+28	+40
1-inch	+34	+46
1¼-inch	+28	+40
1½-inch	+27	+39

Lap Weld

2 and 2½ inches	+13	+25
3 to 4-inch	+ 8	+17
4½ to 6-inch	+ 9	+18
8-inch	+12	

(Note—Large jobbers obtain additional preferential discounts of 1, 5 and 2½ on black and galvanized.)

Boiler Tubes

Pittsburgh less carload discounts. Carload 4 points larger

STEEL (Lap Welded)

2 and 2¼-inch	23 off
2½ and 2¾-inch	33 off
3-inch	36 off
4¼ to 3¾-inch	38½ off
4 to 13-inch	42 off

(Note—Additional discounts of 5 to 7 extra 5 per cents now being given.)

CHARCOAL IRON

1½-inch	+22
1¾-inch	+12
2 and 2¼-inch	+ 2
2½ to 3-inch	3
3¾ to 4½-inch	5

(Note—Additional discounts of 2 or 3 extra 5 per cents now being given.)

SEAMLESS COLD DRAWN

1-inch	56 off
1¼ and 1½-inch	48 off
1¾-inch	32 off
2 and 2¼-inch	27 off
2½ and 2¾-inch	35 off
3-inch	41 off
3¼ and 3½-inch	43 off
4-inch	46 off
4½, 5 and 6-inch	41 off

SEAMLESS HOT ROLLED

2 and 2½-inch	30 off
2½ and 2¾-inch	38 off
3-inch	44 off
3¼ and 3½-inch	46 off
4-inch	49 off
4½, 5 and 6-inch	44 off

(Note—Additional discounts of 2 or 3 extra 5 per cents now being given.)

SEAMLESS STEEL MERCHANT BOILER TUBES

Extras:

Add $8 per ton for more than four gages heavier than standard and add 10 per cent to theoretical weight.

Add 5 per cent for lengths over 24 feet and not over 26 feet.

Smaller tubes than 1-inch and lighter than standard gage to be sold at mechanical tubing list and discount.

Intermediate sizes and gages not listed above take price of next larger outside diameter and heavier gage.

SEAMLESS STEEL MECHANICAL TUBING

Base Discounts on New List July 1, 1925

Carbon 0.10 to 0.20 per cent.....50 to 55 off
Carbon 0.30 to 0.40 per cent.....45 to 50 off

SEAMLESS STEEL LOCOMOTIVE AND SUPERHEATER TUBES

Net prices per foot f.o.b. Pittsburgh

Outside diameter	Gage	Price
2-inch	12-gage	14¼c
2-inch	11-gage	15c
2-inch	10-gage	16c
2¼-inch	12-gage	16c
2¼-inch	11-gage	17c
2¼-inch	10-gage	18c
3-inch	7-gage	33c
5⅝-inch	9-gage	50c
5½-inch	9-gage	52c

Plus usual extras for forming and for long lengths over 18 feet and for commercially exact lengths.

Plate Extras

BASE

Rectangular plates, tank steel or conforming to manufacturers' Standard Specifications for structural steel, dated Nov. 24, 1922, or equivalent, ¼-inch thick and over on thinnest edge, (except for ¼-inch or 72 inches wide when ordered to weight in pounds per square foot—see width and gage extras), 100 inches wide and under, down to but not including 6 inches wide, 5 feet 0 inches long up to published limit in length but not over 80 feet 0 inch, are base. Extras per pound for width or diameter.

All Plates, Rectangular or Otherwise

¼-inch thick and heavier, but not less than 11 pounds per square foot, if ordered to weigh—

Over 100 inches to and including 110 inches	.05c
Over 110 inches to and including 115 inches	.10c
Over 115 inches to and including 120 inches	.15c
Over 120 inches to and including 125 inches	.25c
Over 125 inches to and including 128 inches	.50c
Plates less than ¼-inch or lighter than 11 pounds per square foot.	
Over 72 inches to and including 84 inches	.10c
Over 84 inches to and including 96 inches	.20c
Over 96 inches to and including 100 inches	.30c

Over 100 inches add .35c to width extras for plates ¼-inch thick and heavier.

GAGE

Plates not Exceeding 72 inches Wide

Plates less than ¼-inch gage, to and including 7/16-inch; or lighter than 10.2 pounds per square foot to and including 7.65 pounds per square foot..... .20c

Plates over 72 Inches Wide

Plates less than ¼-inch gage, to and including 7/16-inch; or lighter than 11 pounds per square foot, to but not including 7.65 pounds per square foot ..... .20c

Plates ordered 7.65 pounds per square foot ..... .30c

QUALITIES

Pressing steel	.10c
Flange steel (boiler grade)	.15c
Ordinary firebox steel	20c
Stillbottom steel	.30c
Locomotive firebox steel	.50c
Marine steel	1.50c
Hull material subject to U. S. Navy Dept. Specifications for Medium or Soft Steel	.10c
High tensile hull steel subject to U. S. Navy Dept. or equivalent specifications	1.00c
Boiler steel subject to U. S. Navy Dept. Specifications, classes A and B	1.50c

Hull plates to hull specifications, required to stand cold flanging, take extra for flange steel.

Floor Plates

Checkered plates 1.75c

Checkered plates are not furnished to sketch and are rolled from "Stock Steel" only. No physical tests will be made on checkered plates.

INSPECTION

Mill inspection .....No extra

Charges for other inspection, such as Lloyd's or American bureau of shipping, will be made by inspection bureau direct to buyer.

CUTTING

LENGTH OR DIAMETER

All Plates, Rectangular or Otherwise

Five feet and over up to published limit of length, but not over 80 feet....No extras

Under 5 feet to 3 feet inclusive	.10c
Under 3 feet to 2 feet inclusive	.25c
Under 2 feet to 1 foot inclusive	.50c
Under 1 foot	1.55c
Over 80 feet to 100 feet inclusive	.10c

Over 100 feet add .25c plus .05c for every additional 2 feet or fraction thereof.

Regular Sketches

With not more than four straight cuts. (Including straight taper plates)

Additional extra ..... .10c

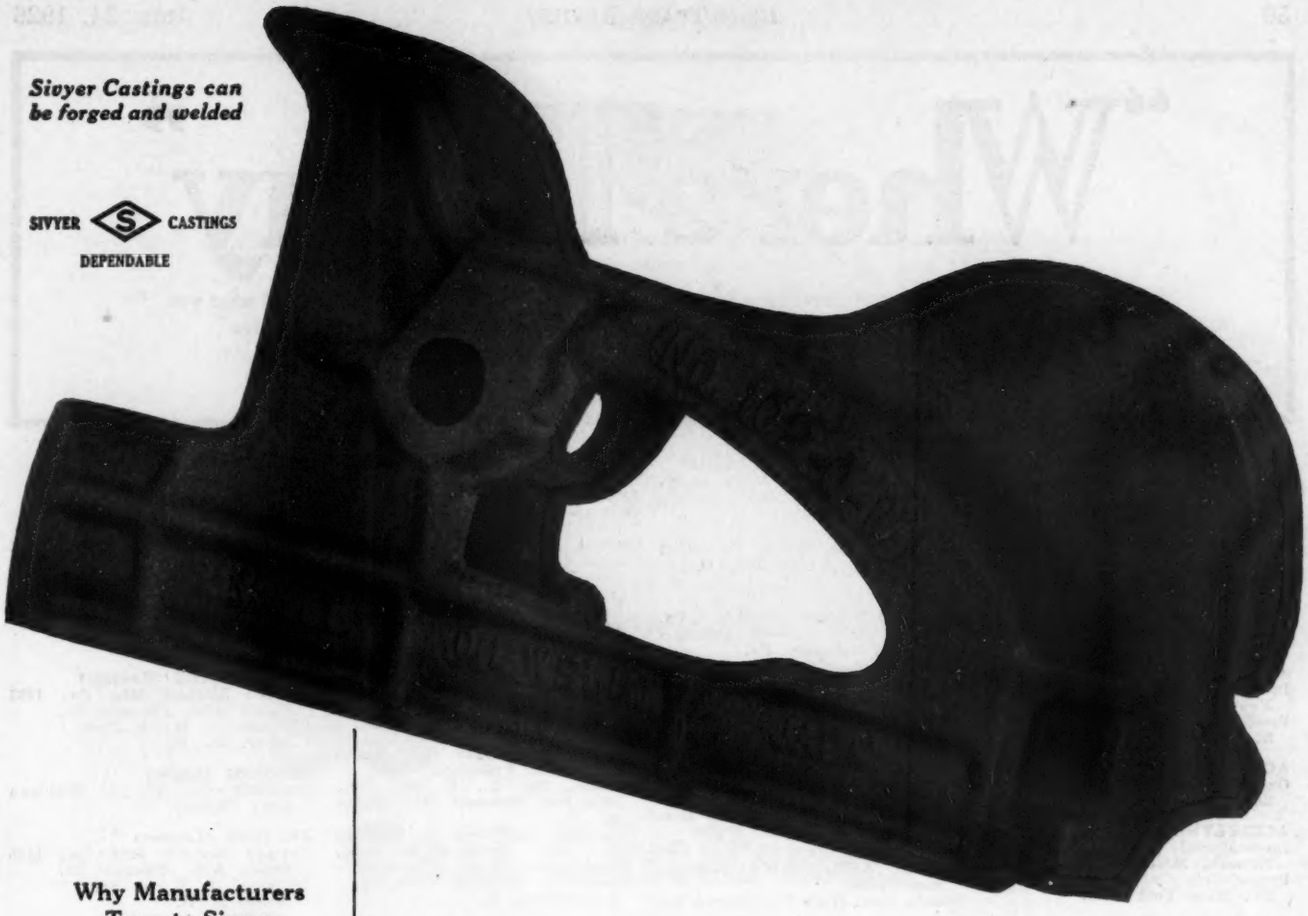
Irregular Sketches

With not more than four straight cuts. (Sketches cannot be sheared wiht re-entrant angles)

Additional extra ..... .20c

Sivyer Castings can be forged and welded

SIVYER (S) CASTINGS
DEPENDABLE



The cage for a famous circle jack—cast, successfully, for more than 10 years, in Sivyer Electric Steel.

Why Manufacturers Turn to Sivyer

The strength of Sivyer Steels and Alloy Steels have been proven—*first*, by exhaustive foundry tests—*second*, by years of service under the toughest of actual conditions.

The carefulness of Sivyer Foundry Practice is illustrated by such jobs as the circle jack cage shown on this page. Year after year manufacturers stay with Sivyer because there they obtain the things they want

They Get:
- Greater Strength, Longer Life
- Less danger of breakage in service
- Lower machining and grinding costs,
- Fewer rejects,
- And the backing of a name that is famous throughout the mid-continent fields

If you are having trouble with any of your parts, send blue prints of them Recommendations will be made without obligating you in any way

The Final Safeguard Against Failure

For More Than Ten Years

IMPORTANT and intricate parts for many pieces of equipment that have gained fame in the mid-continent oil-fields, were first developed and made successfully by Sivyer. The cage for a famous circle jack is one of these. It has been cast steadily and successfully in Sivyer Electric Steel for more than ten years. In this particular case, it was found that increased demands from the fields necessitated a stronger metal than malleable. Forgings were impractical—open hearth steel too stiff in its molten state to form the sharply varying sections. After ten consecutive years of experience with Sivyer Steel the user writes, "—we have experienced no trouble in sustaining the excessive loads placed upon these Jacks in handling the heaviest drilling tools now in use." Sivyer Steel foundry practice and experience help to provide such an assured safeguard against failure in service.

SIVYER STEEL

SIVYER STEEL CASTING COMPANY, MILWAUKEE

"Where-To-Buy"

A classified-by-products list of advertisers for the convenience of readers. If you don't find what you want, write us and we will tell you where to get it. ¶Index to advertisements will give you page number of any advertiser and by referring to advertisement you can get full particulars about products.

ACCUMULATORS
Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa.
Logemann Brothers Co., 3126 Burleigh St., Milwaukee, Wis.
Pennsylvania Engineering Works, New Castle, Pa.
United Engineering & Foundry Co., Farmers Bank Bldg., Pittsburgh, Pa.
Wood, R. D., & Co., 400 Chestnut St., Philadelphia, Pa.

ACETYLENE (Dissolved)
International Oxygen Co., Newark, N. J.
Prest-O-Lite Co., The, 30 E. 42nd St., New York City.

ACETYLENE GENERATORS
Oxweld Acetylene Co., 30 E. 42nd St., New York City.

ACETYLENE IN CYLINDERS
International Oxygen Co., Newark, N. J.
Prest-O-Lite Co., The, 30 E. 42nd St., New York City.

ACIDS (Pickling)
American Chemical Paint Co., Ambler, Pa.

ADAMITE ROLLS
American Adamite Co., The, 12th & Etna Sts., Pittsburgh, Pa.

AIR COMPRESSORS—See COMPRESSORS (Air)

ALLOYS
Browne, deCourcy, Inc., 8 West 40th St., New York City.
Electro Metallurgical Sales Corp., 30 E. 42nd St., New York City.
Lavino, E. J., & Co., Bullitt Bldg., Philadelphia, Pa.
Metal & Thermit Corp., 120 Broadway, New York City.
Titanium Alloy Mfg. Co., Niagara Falls, N. Y.
Vanadium Corp. of America, 120 Broadway, New York City.

ALUMINUM
Leavitt, C. W., & Co., 30 Church St., New York City.
Rogers, Brown & Crocker Bros., Inc., 21 E. 40th St., New York City.

ALUMINUM (Vanadium)
Vanadium Corp. of America, 120 Broadway, New York City

ALUMINUM TUBING
Summerill Tubing Co., Bridgeport, Pa.

ANGLES, TEES, CHANNELS—See STEEL (Structural)

ANNEALING BOXES
Adamson Machine Co., The, Akron, Ohio.
Farrell-Cheek Steel Foundry Co., Sandusky, O.
Pittsburgh Malleable Iron Co., 34th & Smallman Sts., Pittsburgh, Pa.
Riter-Conley Co., Oliver Bldg., Pittsburgh, Pa.
Smith, George H., Steel Casting Co., Milwaukee, Wis.
Union Steel Casting Co., 62nd and Butler Sts., Pittsburgh, Pa.
United Engineering & Foundry Co., Farmers Bank Bldg., Pittsburgh, Pa.
Zanesville Malleable Co., Zanesville, Ohio.

ANTI GLARE PREPARATION
Skybryte Co., The, Keith Bldg., Cleveland, O.

APPRAISALS
McKee, Arthur G., & Co., 2422 Euclid Ave., Cleveland, O.

AXLES
Bethlehem Steel Co., Bethlehem, Pa.
Carnegie Steel Co., 431 Carnegie Bldg., Pittsburgh, Pa.
Champion Machine & Forging Co., The, 3675 E. 78th St., Cleveland, Ohio.
Illinois Steel Co., 208 So. LaSalle St., Chicago, Ill.
National Tube Co., Frick Bldg., Pittsburgh, Pa.

BALING PRESSES
Logemann Brothers Co., 3126 Burleigh St., Milwaukee, Wis.

BANDS AND HOOPS (Galvanized Strips)
Sharon Steel Hoop Co., Sharon, Pa.

BANDS (Iron)
Bethlehem Steel Co., Bethlehem, Pa.

BANDS (Steel)
Bethlehem Steel Co., Bethlehem, Pa.

BANDS (Welded Iron and Steel)
Akron-Selle Co., Akron, O.

BAR BENDERS
Kardong Bros., 346 Buchanan St., Minneapolis, Minn.

BARGES (Steel)
American Bridge Co., 71 Broadway, New York City.

BARRELS (Steel)
Cleveland Wire Spring Co., The, 1281 E. 38th St., Cleveland, O.

BARS (Acid Resistant)
Alcumite Corp., The, Dayton, O.

BARS (Alloy)
Central Steel Co., Massillon, O.
Donner Steel Co., Inc., P. O. Box 1000, Buffalo, N. Y.
Wheelock, Lovejoy & Co., Inc., 128 Sidney St., Cambridge, Mass.

BARS (Concrete Reinforcements)
Bethlehem Steel Co., Bethlehem, Pa.
Donner Steel Co., Inc., P. O. Box 1000, Buffalo, N. Y.
Franklin Steel Works, Franklin, Pa.
Gulf States Steel Co., Brown-Marx Bldg., Birmingham, Ala.
Laclede Steel Co., Arcade Bldg., St. Louis, Mo.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.
Truscon Steel Co., Youngstown, O.

BARS (Iron and Steel)
Bethlehem Steel Co., Bethlehem, Pa.
Lockhart Iron & Steel Co., Pittsburgh, Pa.
Morris, Wheeler & Co., 30th and Locust Sts., Philadelphia, Pa.
Penn Iron & Steel Co., Creighton, Pa.
Republic Iron & Steel Co., Youngstown, O.
Truscon Steel Co., Youngstown, O.

BARS (Steel)
Bethlehem Steel Co., Bethlehem, Pa.
Bliss & Laughlin, Inc., Harvey, Ill.
Carnegie Steel Co., 431 Carnegie Bldg., Pittsburgh, Pa.
Central Steel Co., Massillon, O.
Donner Steel Co., Inc., P. O. Box 1000, Buffalo, N. Y.
Franklin Steel Works, Franklin, Pa.
Illinois Steel Co., 208 S. LaSalle St., Chicago, Ill.
Illinois Steel Warehouse Co., 1319 Wabansia Ave., Chicago, Ill.
Inland Steel Co., First National Bank Bldg., Chicago, Ill.
Jones & Laughlin Steel Corp., Pittsburgh, Pa.
Pacific Coast Steel Co., Rialto Bldg., San Francisco, Calif.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.
Tennessee Coal, Iron & Railroad Co., 1351 Brown-Marx Bldg., Birmingham, Ala.
Youngstown Sheet & Tube Co., Youngstown, O.

BARS, STEEL (Electric Furnace)
Timken Roller Bearing Co., The, Canton, Ohio.

BEAMS, CHANNELS, ANGLES, ETC.
Bethlehem Steel Co., Bethlehem, Pa.
Blystone Mfg. Co., Ironton St., Cambridge Springs, Pa.
Carnegie Steel Co., 431 Carnegie Bldg., Pittsburgh, Pa.
Illinois Steel Co., 208 So. LaSalle St., Chicago, Ill.
Inland Steel Co., First National Bank Bldg., Chicago, Ill.
Jones & Laughlin Steel Corp., Pittsburgh, Pa.
Phoenix Iron Co., The, 20 So. 15th St., Philadelphia, Pa.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.
Snead Architectural Iron Works, Louisville, Ky.

BEARINGS (Ball)
Hoover Steel Ball Co., Ann Arbor, Mich.
New Departure Mfg. Co., The, Bristol, Conn.
Norma-Hoffman Bearings Corp., Stamford, Conn.

BEARINGS (Journal)
Hyatt Roller Bearing Co., Newark, N. J.
Keystone Bronze Co., 39th St., Pittsburgh, Pa.

BEARINGS (Motor)
Hoover Steel Ball Co., Ann Arbor, Mich.
Hyatt Roller Bearing Co., Newark, N. J.
Norma-Hoffman Bearings Corp., Stamford, Conn.

BEARINGS (Roller)
Hoover Steel Ball Co., Ann Arbor, Mich.
Hyatt Roller Bearing Co., Newark, N. J.
Norma-Hoffman Bearings Corp., Stamford, Conn.
Timken Roller Bearing Co., The, Canton, O.

BEARINGS (Thrust)
Hoover Steel Ball Co., Ann Arbor, Mich.
Norma-Hoffman Bearings Corp., Stamford, Conn.
Timken Roller Bearing Co., The, Canton, O.

BELT CEMENT AND DRESSING (Leather)
Williams, I. B., & Sons, Dover, N. H.

BELT LACING (Leather)
Chicago Rawhide Mfg. Co., 1305 Elston Ave., Chicago, Ill.
Williams, I. B., & Sons, Dover, N. H.

BELTING (Chain)
Link-Belt Co., 910 S. Michigan Ave., Chicago, Ill.

BELTING (Leather)
Chicago Rawhide Mfg. Co., 1305 Elston Ave., Chicago, Ill.
Williams, I. B., & Sons, Dover, N. H.

BENCHES AND FRAMES (Drawing)
Morgan Construction Co., Worcester, Mass.
Vaughn Machinery Co., The, Cuyahoga Falls, O.

BENDING AND STRAIGHTENING MACHINES
Cleveland Punch & Shear Works Co., 3917 St. Clair Ave., Cleveland, O.
Hinman, D. A., & Co., Sandwich, Ill.
Kane & Roach, Niagara and Shonnard Sts., Syracuse, N. Y.
Kardong Bros., 346 Buchanan St., Minneapolis, Minn.
Logemann Brothers Co., 3126 Burleigh St., Milwaukee, Wis.
Long & Allstatter Co., Hamilton, O.
Sutton-Abramsen Engineering Co., Park Bldg., Pittsburgh, Pa.

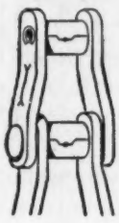
BENZOL AND TOLUOL RECOVERY PLANTS
Koppers Co., The, Union Trust Bldg., Pittsburgh, Pa.

BILLETS (Forging)
Bethlehem Steel Co., Bethlehem, Pa.
Midvale Co., The, Nicetown, Philadelphia, Pa.

BILLETS (Forging, Alloy Steel)
Bethlehem Steel Co., Bethlehem, Pa.

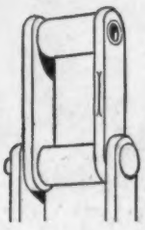
BILLETS AND BLOOMS
American Rolling Mill Co., Middletown, O.
American Tube & Stamping Co., The., Bridgeport, Conn.
Andrews Steel Co., Newport, Ky.
Bethlehem Steel Co., Bethlehem, Pa.
Central Steel Co., The, Massillon, Ohio.
Donner Steel Co., Inc., P. O. Box 1000, Buffalo, N. Y.
Illinois Steel Co., 208 South La Salle St., Chicago, Ill.
Inland Steel Co., First National Bank Bldg., Chicago, Ill.
Interstate Iron & Steel Co., 104 S. Michigan Ave., Chicago, Ill.
Wheeling Steel Corp., Wheeling, W. Va.
Wood, Alan, Iron & Steel Co., Widener Bldg., Philadelphia, Pa.

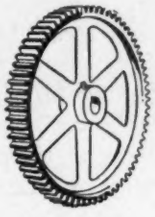
See Index to Advertisements for Pages Containing Advertisements of Companies Listed Above



Save Time

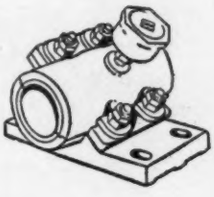
Call Link-Belt





LINK-BELT'S 8 Manufacturing Plants, 12 Warehouses, and 27 Branches, with Distributors, Agents, and Jobbers scattered throughout the country, are at your service for elevating, conveying, and power transmission accessories—chains, wheels, buckets, gears, etc.,

—plus a personal service that results from an understanding of conveyor and power transmission requirements.



Link-Belt Company is at your service—call or write to the nearest office. We are as near to you as your telephone.

Ask us about our Link-Belt Silent Chain Drives. Flexible as a Belt—Positive as a Gear—More Efficient than Either.
Drives from ½ to 10 h.p. now in stock.

2703

LINK-BELT COMPANY

CHICAGO, 300 W. Pershing Road — Ashland, Ky. . . . . V. P. Dalmas & Co., 100 W. Winchester Ave. Atlanta, 610 Citizens & Southern Bank Bldg. Birmingham, Ala., 720 Brown-Marx Bldg. Boston . . . . . 49 Federal St. Buffalo . . . . . 554 Ellicott Square Cleveland . . . 531 Rockefeller Bldg. Denver . . . . . 520 Boston Bldg. Detroit . . . . . 5938 Linsdale Ave. Huntington, W. Va., Robson-Prichard Bldg. Kansas City, Mo., R. 436, 1002 Baltimore Ave.

INDIANAPOLIS, 200 S. Belmont Ave. — Louisville, Ky. . . . 321 Starks Bldg. Minneapolis, Minn. . . . . Link-Belt Supply Co., 418 S. Third St. New Orleans 504 New Orleans Bank Bldg. Whitney Supply Co., Ltd., 733 Toboupitoulas St.

PHILADELPHIA, 2045 Hunting Park Ave. — New York . . 2676 Woolworth Bldg. Pittsburgh . . . . 335 Fifth Ave St. Louis . . . . . 3638 Olive St. Toronto 2, and Montreal, Link-Belt Limited Wilkes-Barre, 323 Second National Bank Bldg.

H. W. CALDWELL & SON CO.:—Chicago, 1700 S. Western Ave. Dallas, Texas, 810 Main St. New York, 2676 Woolworth Bldg.
LINK-BELT MEESE & GOTTFRIED CO.:—Fresno, Calif., 215 Brix Bldg. Los Angeles, 400 E. Third St. Oakland, Calif., 526 Third St. Portland, Ors., 67 Front St. San Francisco, 19th and Harrison Sts. Seattle, 820 First Ave. S.

LINK-BELT

Conveying and Power Transmission Equipment

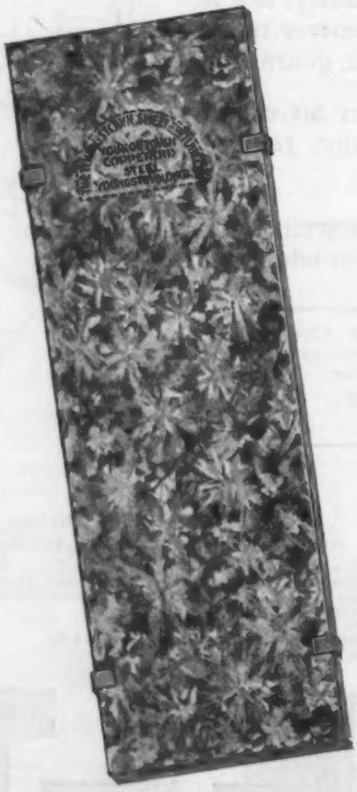
Youngstown Copperoid Steel Sheets

FOR use in factory and other building construction, steel sheets are particularly suitable for many purposes because of the ease with which they may be installed, their resistance to fire and the fact that they lend much strength to light framing.

In such uses, however, they are exposed to atmospheric corrosion, and their durability becomes an important consideration. For this reason we recommend "Youngstown Copperoid Steel" Sheets for roofing, siding, window frames, spouting, and all work in which the steel will be exposed to the atmosphere.

The reason is the unquestioned durability of these sheets. They may be reasonably expected to last several times as long as plain carbon steel sheets, especially in localities where there is coal smoke.

The enthusiastic approval accorded to "Youngstown" Steel Sheets by manufacturers, fabricators and sheet metal workers throughout this country, is convincing evidence of the superior quality of our sheets.



The name "Youngstown" on Steel Sheets is your protection.

THE YOUNGSTOWN SHEET & TUBE COMPANY

Youngstown, Ohio

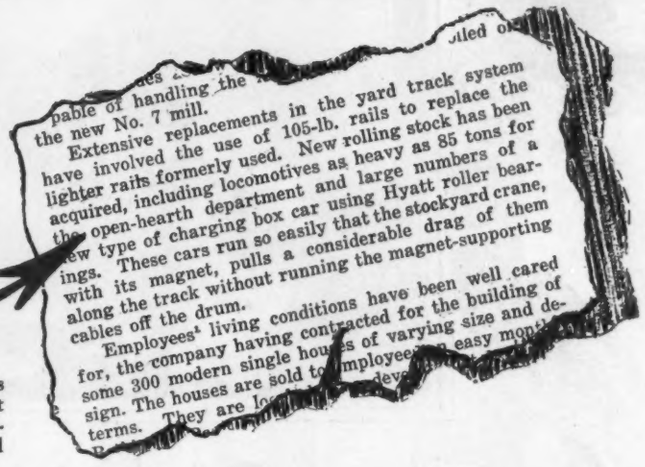
DISTRICT SALES OFFICES:

ATLANTA—Healey Bldg.
BOSTON—Massachusetts Trust Bldg.
BUFFALO—Liberty Bank Bldg.
CHICAGO—Conway Bldg.
CINCINNATI—Union Trust Bldg.
CLEVELAND—Union Trust Bldg.
DALLAS—Magnolia Bldg.
DENVER—First National Bank Bldg.
DETROIT—First National Bank Bldg.
KANSAS CITY, MO.—Commerce Bldg.
MINNEAPOLIS—Andrus Bldg.
NEW ORLEANS—Audubon Bldg.
NEW YORK—30 Church St., Hudson Terminal Bldg.
PHILADELPHIA—Franklin Trust Bldg.
PITTSBURGH—Oliver Bldg.
ST. LOUIS—Missouri State Life Bldg.
SAN FRANCISCO—Sharon Bldg.
SEATTLE—Central Bldg.
YOUNGSTOWN—Stambaugh Bldg.

LONDON REPRESENTATIVE—The Youngstown Steel Products Co.
316-17 Dashwood House, Old Broad Street, London, E. C. England

Pull twice the load on HYATT Bearings

from **IRON AGE**



...pable of handling the ... the new No. 7 mill.

Extensive replacements in the yard track system have involved the use of 105-lb. rails to replace the lighter rails formerly used. New rolling stock has been acquired, including locomotives as heavy as 85 tons for the open-hearth department and large numbers of a new type of charging box car using Hyatt roller bearings. These cars run so easily that the stockyard crane, with its magnet, pulls a considerable drag of them along the track without running the magnet-supporting cables off the drum.

Employees' living conditions have been well cared for, the company having contracted for the building of some 300 modern single houses of varying size and design. The houses are sold to employees on easy monthly terms. They are located ... development ...

"The aim in the new development at this plant," *Iron Age* concludes, "was not primarily greater tonnage, but lower operating costs, better working conditions and increased security of dividends."

REDUCE friction and you create power. It is free power—power which you don't have to pay for in terms of more equipment and electricity. Clear profit.

Hyatt Roller Bearings on steel mill equipment means half the friction at the bearing points. They help motors, cranes and locomotives pull twice the load.

They are built to give long, hard service—without repairs or replacements. Some Hyatts have been paying service dividends for over twenty years.

The helical Hyatt Rollers are flexible, to keep shock loads and strains distributed. They keep the oil circulating—and receive fresh lubricant at intervals. The most persistent grit does not penetrate the enclosed Hyatt mountings.

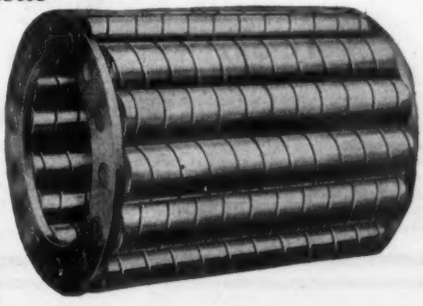
Hyatts reduce maintenance expense and labor 85%. They increase power 15%.

Consider your bearing equipment as carefully as you consider other investments. Hyatt-ize for safety and permanent freedom from bearing difficulties.

HYATT ROLLER BEARING COMPANY

Newark Detroit Chicago San Francisco
Worcester Philadelphia Charlotte
Pittsburgh Cleveland

HYATT
ROLLER BEARINGS



ANOTHER SHEET STEEL SERVICE

Expanded metal lath gives plaster a steel base that protects it against cracks, lath-marks and the ravages of fire. Costless because it endures.

Shaped in Steel

This Modern Kitchen does Save Steps

Sheet Steel ... reduces polishing ... Cupboards ... t's work. The ... eat resists ... led per- ... stubs ... ce.

Creating Business for Every Product Shaped in Steel

This is one of the current advertisements in the SHEET STEEL TRADE EXTENSION CAMPAIGN. It is typical of similar educational messages appearing in 34 leading magazines which have a total circulation of more than 10,000,000.

These advertisements do more than sell the particular products featured, for they are stimulating public interest in all of the many advantages inherent in Sheet Steel—its strength, its safety, its fire resistance, its economy, and durable beauty.

Every manufacturer of a product shaped in steel can take advantage of this awakened public interest by featuring the fact that his is a Sheet Steel product. He can make the qualities inherent in Sheet Steel bring him added sales and added profits.

Manufacturers can receive copies of these advertisements together with complete information concerning the campaign by addressing the SHEET STEEL TRADE EXTENSION COMMITTEE, OLIVER BUILDING, PITTSBURGH, PA.

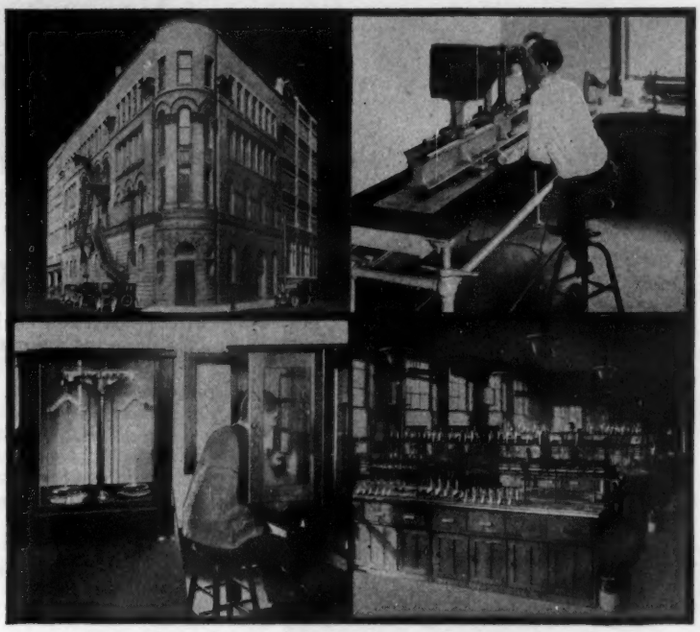
SHEET STEEL
FOR SERVICE

Sheet Steel Saves Steps in Business too

MASTER TEC BRAND

This trade-mark stenciled on galvanized Sheet Steel is definite insurance to the buyer that every sheet so branded is of prime quality—full weight for the gauge stamped on the sheet—never less than 28 gauge—and that the galvanizing is of the full weight and quality established by the SHEET STEEL TRADE EXTENSION COMMITTEE specification.

The Infinitely Minute in the Detail of Steel Making



Research Building of the Wheeling Steel Corporation, where a corps of metallurgists and chemists study processes and problems of general production.

EVEN the smallest detail in this great business of steel making requires the most painstaking care. With Wheeling, such strict attention to detail is part of the everyday routine. In the laboratories, each element is subjected to rigid physical and chemical testing, to insure perfection in the finished product, to insure that every product will fully measure up to the work it has to do.

Throughout the country, Wheeling steel products are playing important parts in the nation's industry and progress—meeting every test, setting standards of their own in performance and satisfaction.

WHEELING STEEL

"From Mine to Market"

WHEELING STEEL CORPORATION, WHEELING, W. VA.

WHEELING

Billets	Black Sheets	Full Finished Sheets	Tin Plate
Slabs	Galvanized Sheets	Standard Pipe	Rods and Wire
Blue Annealed Sheets	Long Terne Sheets	Oil Country Pipe	Nails

USING AN
AFTERCOOLER?
It will pay you to install an Aftercooler in your Compressed Air System.
It will remove the water and thus eliminate the freezing and the faulty lubrication which moisture causes in pneumatic tools. It cools the air and eliminates the alternate expansion and contraction of pipe lines.
You will get increased efficiency from your tools with cool, dry air. Aftercoolers quickly pay for themselves.
Horizontal and vertical types for either inside or outside installations are available.
INGERSOLL-RAND COMPANY
11 Broadway, New York City
Offices in principal cities the world over.
For Canada Refer—Canadian Ingersoll-Rand Co,. Limited, 260 St. James Street, Montreal, Quebec.
829-C
Ingersoll-Rand

Powered by three Wright "Whirlwind" Engines, [made by Wright Aeronautical Corporation, Paterson, N. J.] the "Josephine Ford" carried Lt. Commander Byrd to the North Pole and back.

To the Top of the World and Back

Powered By Three Wright Engines With Vital Parts of Vanadium Steel

Lieutenant Commander Byrd's monoplane, "Josephine Ford", [built by The Fokker Company], which carried him and his pilot, Bennett, safely to the North Pole and back, was powered by three Wright "Whirlwind" Engines.

From the Chantier, Lieutenant Commander Byrd's vessel at King's Bay, Spitzbergen, he radioed Wright Aeronautical Corporation:

WRIGHT MOTORS FUNCTIONED PERFECTLY ON SIXTEEN HOUR POLAR FLIGHT DID NOT MISS A REVOLUTION AND IS GREAT MOTOR

BYRD

Contributing to the dependability and perfect performance of these Wright Engines were their numerous vital parts of Vanadium Steel, selected for its "extremely high and uniform tensile strength, hardness and resistance to fatigue."

IN ALL WRIGHT ENGINES

built by Wright Aeronautical Corporation, the majority of the gears are Vanadium Steel, as are practically all nuts, studs, bolts, screws and a great many plugs, pins and washers. Other highly stressed Wright Engine parts, which are made of Vanadium Steel, include magneto coupling parts, connecting rod bolts, valve springs and balance weight pins.

Not only where human life is dependent on the strength of steels, but in every application requiring steel toughness, resistance to fatigue and durability, Vanadium Steels are meeting the requirements.

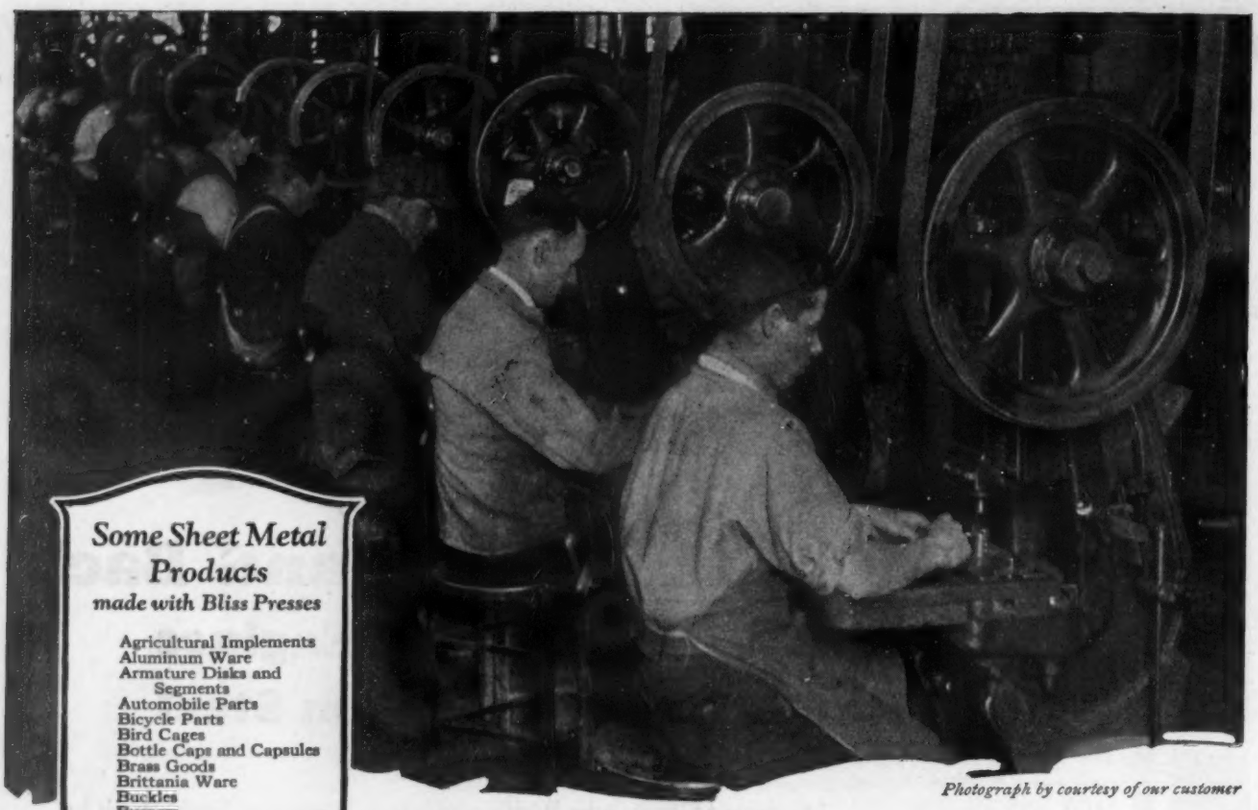
Data on Vanadium Steels will be gladly sent you. Write.

VANADIUM CORPORATION OF AMERICA

New York Detroit

VANADIUM STEELS

for strength, toughness and durability



Photograph by courtesy of our customer

Some Sheet Metal Products
made with Bliss Presses

Agricultural Implements
Aluminum Ware
Armature Disks and Segments
Automobile Parts
Bicycle Parts
Bird Cages
Bottle Caps and Capsules
Brass Goods
Brittania Ware
Buckles
Burners
Butter Tins
Cash Registers
Cigarette Boxes
Clocks
Coal Hods
Collapsible Tubes
Cooking Utensils
Cornice Work
Cuspidors
Cutlery
Dental Instruments
Dinner Pails
Drip Pans
Door Knobs
Drop Forgings
Druggists' Tinware
Dust Pans
Electrical Goods
Elevator Buckets
Enamel Ware
Expanded Metal Lath
Fish Cans
Forks
Fruit Cans
Fry Pans
Furniture (Metal)
Gas Fixtures
Gas Ranges
Gun Parts
Hammers
Hardware
Harness Trimmings
Hinges
Horse Shoes
Jewelry
Kitchen Boilers
Kitchen Utensils
Lamps
Lanterns
Lard Pails
Locks
Match Boxes
Meat Cans
Medals
Metallic Ceilings
Metal Lath
Metal Radiators
Musical Instruments
Oil Cans
Oil Stoves
Perforated Metal
Paint Cans
Paint Tubes
Petroleum Cans
Pick-eyes
Pieced Tinware

BLISS

Since 1857

A busy line-up

Bliss Presses in action always present a mighty busy scene—delivering a constant stream of finished parts frequently ranging upwards of many thousands per hour. Here, for example, we see a battery of eight Bliss No. 18 and two No. 19 Inclinable Presses forming and blanking small parts used in the manufacture of electric light fixtures. The parts are stamped from strips of sheet steel, brass, copper, fibre, and pressboard varying from .010 in. to ¼ in. in thickness.

The large variety of the work being turned out by this equipment is typical of the adaptability and flexibility of Bliss Presses. Frequently a single Bliss Press is used for many different operations on a variety of sheet metal and composition parts—an opportunity for economical production that goes far in reducing manufacturing costs.

Investigate the possibilities of Bliss equipment in *your* plant.

E. W. BLISS CO. BROOKLYN N. Y., U. S. A.

Factories: BROOKLYN, N. Y. HASTINGS, MICH. SALEM, O. CLEVELAND, O.
Sales Offices: DETROIT CLEVELAND CHICAGO PITTSBURGH PHILADELPHIA ROCHESTER CINCINNATI NEW HAVEN
Foreign Factories and Offices: LONDON, ENG. TURIN, ITALY PARIS, FRANCE

BLISS

PRESSES - DIES - SPECIAL MACHINERY

No. 528

Don't compromise with corrosion

THE high tensile strength and ready manipulation of Alcumite—its replacement of steel to the last detail—make compromise with destructive agencies unnecessary.

Permanent corrosion-resistant equipment of practically any type can be manufactured from Alcumite forgings, castings and sheet, assembled with rods, bars, bolts, nuts, lag screws and washers.

Standard forms of Alcumite—pipe, fittings, valves, sheet, rods, bars—are available from stock. Manufacturers can fabricate corrosion-resistant equipment of Alcumite in their own shops by the customary metal working methods. Alcumite machines like mild steel. No special tools or methods are necessary for working it.

Alcumite forgings and castings are made to customers' specifications. Prompt and close cooperation with the customer in the production of high grade equipment to meet his particular need are features of this service.

Shall we send you samples of Alcumite and some interesting data on its properties? Mail the coupon.

The Alcumite Corporation, Dayton, Ohio

A division of The Duriron Co., Inc.

1054 Grand Central Terminal, New York City
110 So. Dearborn Street, Chicago, Illinois
830 Monadnock Building, San Francisco, California

Manufactured in Canada for Emmans, Limited
285 Beaver Hall Hill, Montreal, Quebec

What is Alcumite?

ALCUMITE is a non-ferrous alloy combining remarkable resistance to corrosion with great strength and ductility. It is one of the strongest non-ferrous alloys known. Cast, it has an average tensile strength of 75,000 pounds per square inch; hot rolled, as high as 90,000 pounds per square inch. It has a fine grained uniform texture; shows great resistance to fatigue and abrasion; and retains its strength under high pressures and temperatures. It can be forged, rolled, sheared, punched, drawn or machined as readily as mild steel and with the same equipment.

Alcumite is highly resistant to sulphuric acid of concentrations below 60° Be. up to 210° F.; weak muriatic; acetic; fruit juices; vegetable acids; and most corrosive fumes and gases encountered in industries. There are only a few solutions such as nitric acid and some of the chlorides for use with which Alcumite is not recommended.

Send a sample of Alcumite and information concerning its application

in.....

Company.....

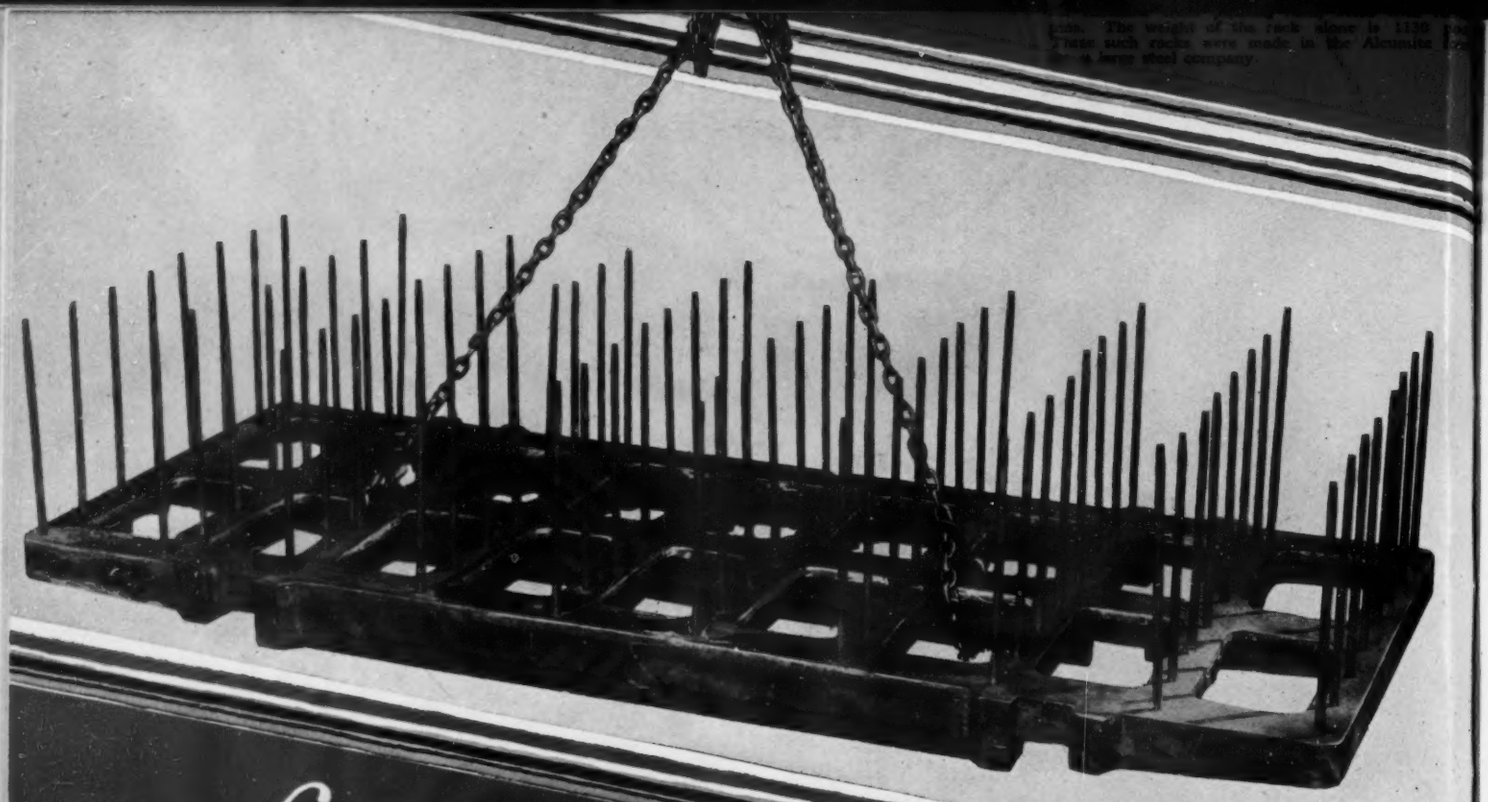
Address.....

Name.....

Position.....

Alcumite

The acid resistant metal with strength and adaptability like steel



PICKLING sheet racks of cast Alcumite fitted with Alcumite pins are best for the hardest kind of service. Cast Alcumite has a tensile strength of 75,000 pounds per square inch. The metal is practically unaffected by pickling acid through years of service. It is fine-grained, tough and strong. It resists wear and shock. Its strength permits the manufacture of racks with large capacity and without excessive weight—racks that are easily handled—that save power and labor.

Cast Alcumite pickling racks with Alcumite pickling pins do not crack or break in hard service. A big production can be handled without fear of accidents and shut-downs.

Alcumite castings for all kinds of corrosion-resistant equipment are made in the Alcumite foundry to customers' specifications.

Alcumite forgings, castings, sheet, bars, and rods are available on short notice.

A request from you will bring samples of Alcumite, cast and rolled, and information regarding the application of the alloy to your particular situation.

The Alcumite Corporation, Dayton, Ohio
A Division of The Durion Co., Inc.

1034 Grand Central Terminal, New York City
110 So. Dearborn Street, Chicago, Illinois
839 Monadnock Building, San Francisco, California

Manufactured in Canada for Ramsay, Limited, 283 Beaver Hall Hill, Montreal, Quebec

Alcumite

The acid resistant metal with strength and adaptability like steel

SUTTON-ABRAMSEN PORTABLE No. 2 FLAT and SHAPE STRAIGHTENER

A High Speed Production Machine for Straightening Small Sections of Flats, Squares, Hexagons, Octagons, Angles, Zees, Tees, Channels, I's, and other Shapes.

Designed especially for Steel Window Sash and Green House Structural Material.

Write for complete information

SUTTON-ABRAMSEN ENGINEERING CO.
PARK BUILDING PITTSBURGH, PA.

Specify Allegheny Steel

TRADE MARK

The old idea that "Steel is Steel" is all wrong.

Steel is Steel only as much as cloth is cloth. Some cloth is 80% cotton—some cloth is 75% rags—some cloth is 99% wool—and the same is true of steel.

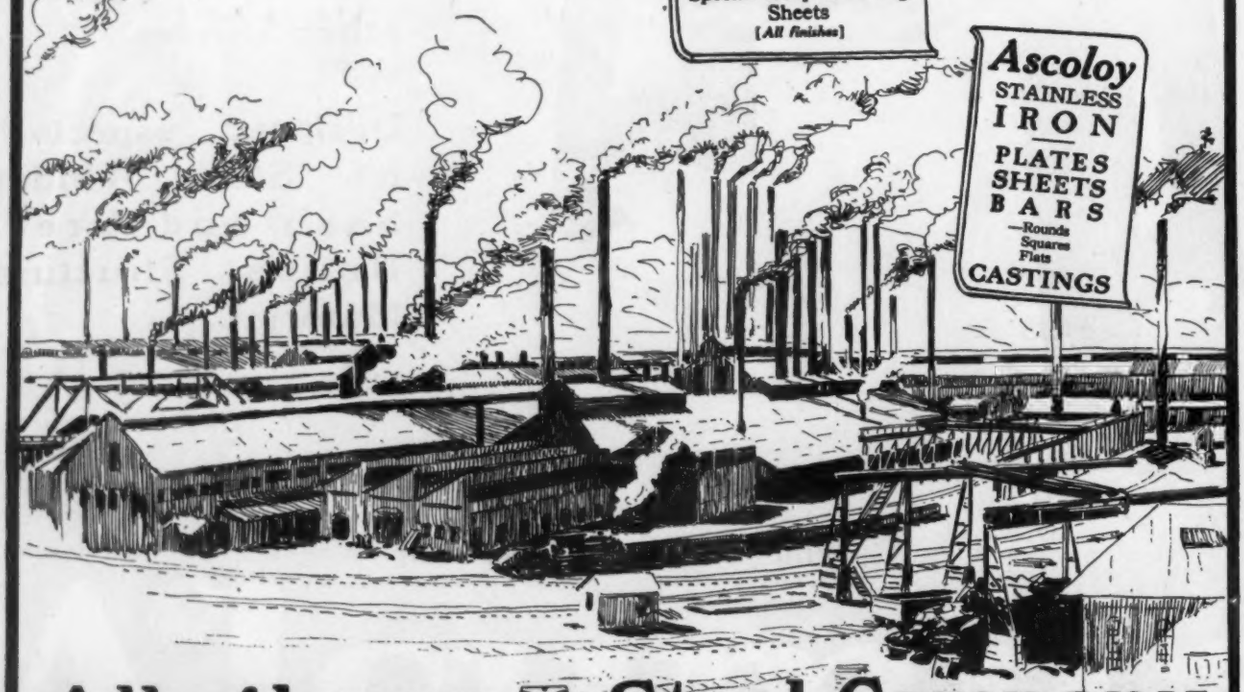
Where requirements are particularly exacting—*Specify Allegheny Steel.*

Send us your inquiries.

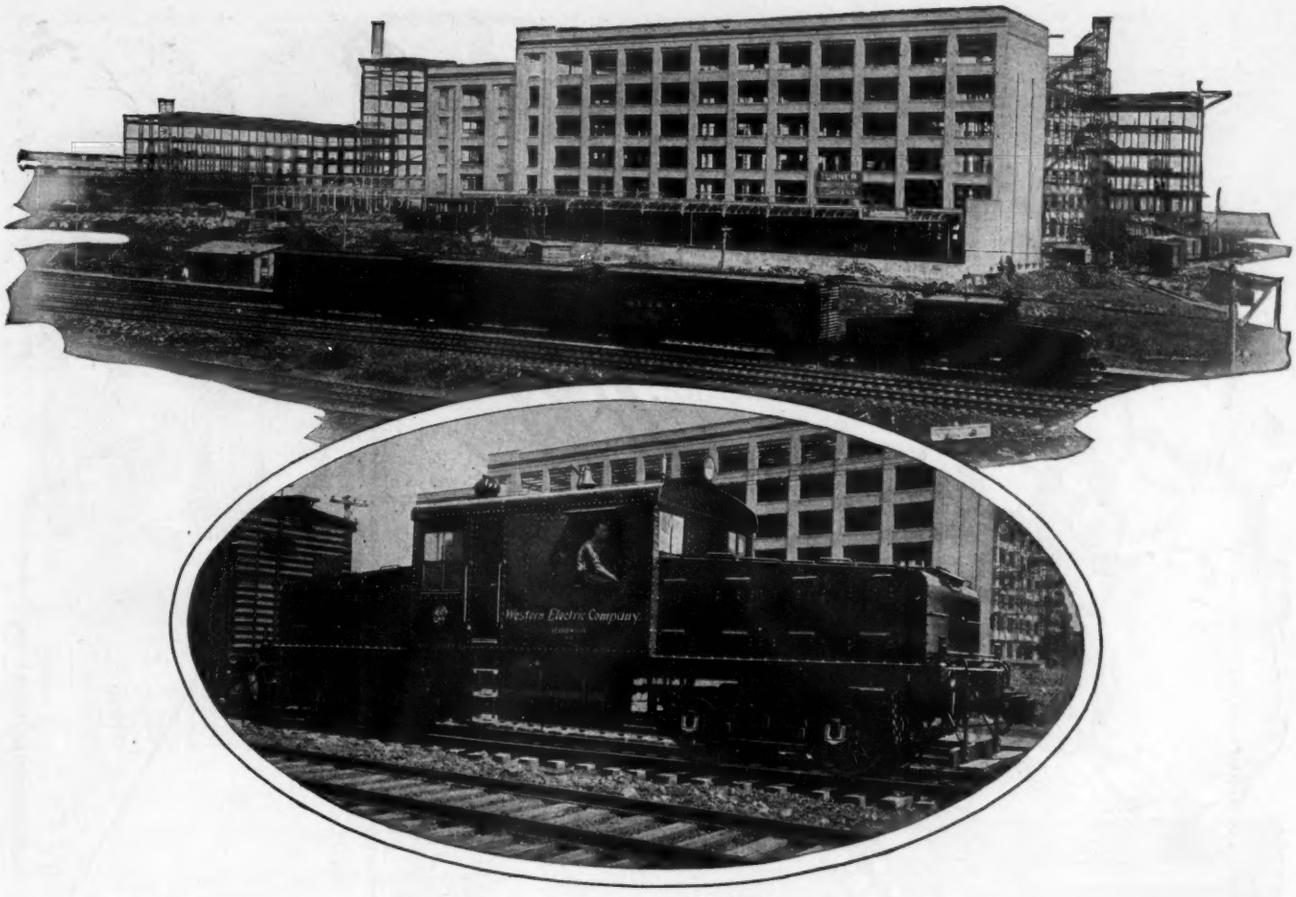
Allegheny Products

Annealing Boxes
Automobile Sheets
Boiler Tubes
Electrical Sheets
Heavy Steel Castings
Metal Furniture Sheets
Single and Full Pickled Sheets
Black Sheets
Blue Annealed Sheets
Special Deep Drawing Sheets
[All finishes]

Ascoloy
STAINLESS
IRON
PLATES
SHEETS
BARS
—Rounds
Squares
Flats
CASTINGS



Allegheny Steel Company
Brackenridge Pennsylvania, U. S. A.



An Electric Giant on "The Meadows" of Kearny

On "the meadows"—the 60-acre Kearny plant of the Western Electric Co.—a G-E 60-ton electric storage battery locomotive meets all the freight and coal haulage requirements.

This locomotive—one of the largest of its kind—is equipped with four 95-h.p. motors which derive their power from a 342 kwh. storage battery. One charge of the battery provides for a day's haulage. This electric giant can haul 20 loaded freight cars at a speed of 5 miles or more per hour and can travel light at 20 miles per hour.

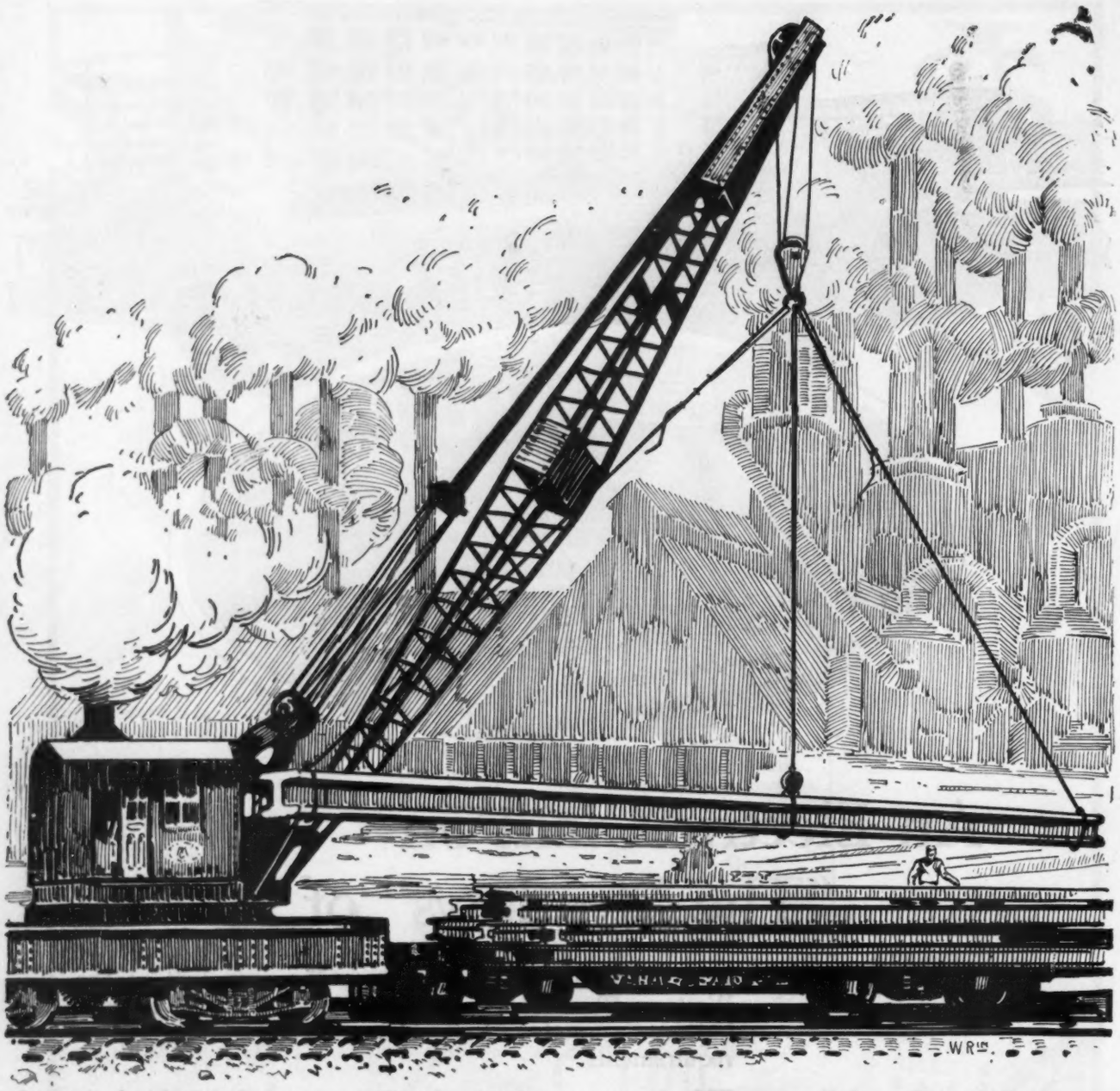
Your haulage conditions may demand a large locomotive like this or a much smaller one—a trolley type, a third-rail type, a combination trolley and storage battery type, or an oil electric—but whatever your requirements, General Electric can meet them. Meet them with equipment which is a respected standard wherever locomotives are used.

General Electric locomotives are designed by G-E, built by G-E, tested by G-E and possess the absolute reliability typical of all G-E products. If renewal parts are desired, they, too, may be secured from G-E.

360-6

GENERAL ELECTRIC

GENERAL ELECTRIC COMPANY, SCHENECTADY, N. Y., SALES OFFICES IN ALL PRINCIPAL CITIES



Showing a Profit on Small Orders

Nowadays, buyers want small orders, but they want them in a hurry. Showing a profit on these orders is greatly dependent on economy in handling.

The McMyler-Interstate No. 12 crane, with its 60-ton capacity, 500 F. P. M. traveling speed, 200 F. P. M. hoisting speed, quick adaptability for bucket, fall block or magnet operation, can perform a multitude of jobs quickly and efficiently, eliminating man-power and costly overhead.

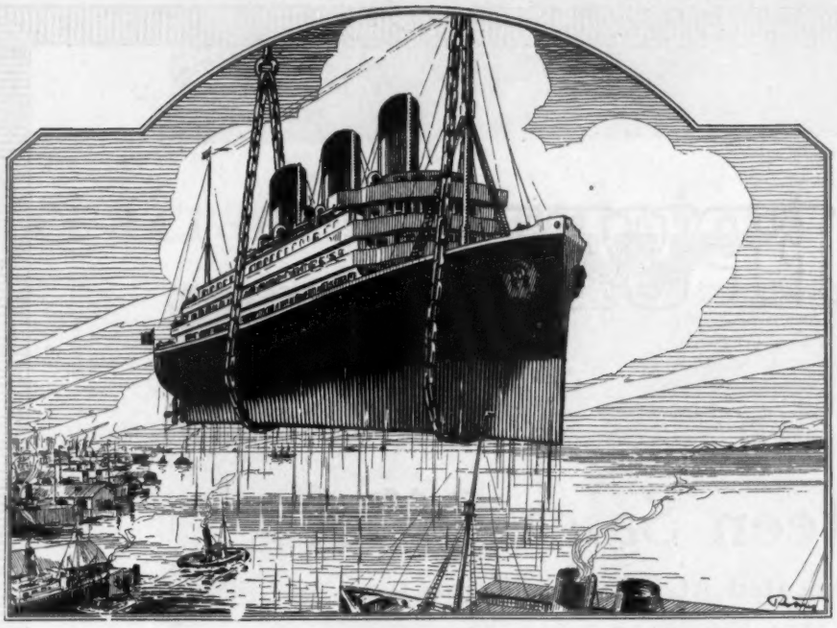
This crane deserves your consideration when buying yard equipment. While you think of it, please place our name on the list to whom you send your inquiries.

Steam Shovels • Gas Shovels • Locomotive Cranes • Clam-shell Buckets

C-12-1

McMyler-Interstate

NEW YORK
BUFFALO
PHILADELPHIA
PITTSBURGH
CLEVELAND
DETROIT
CHICAGO
SAN FRANCISCO
LOS ANGELES



What cranes would you use?

IF you had a single job of lifting that bulked as large as an ocean-going liner, you would be mighty careful about the cranes you used. You would investigate the whole field and buy the best and safest.

Doesn't the yearly weight lifted in your shop aggregate far more than one liner? It is a small shop in which cranes do not lift and carry more than one liner's weight in a year.

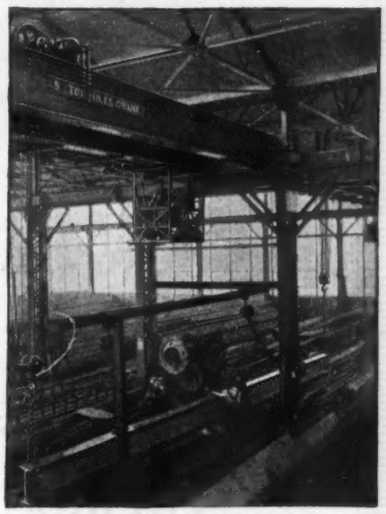
If your cranes do a tremendous yearly job, if they are a vital link in your chain of production (as they generally are) it would pay you to *know* that you are getting adequate crane service. It will cost you nothing to find out. Our engineers will gladly come to your plant, go over your crane equipment and tell you exactly whether you should change or not.

Write for full details of NILES CRANES

Niles Crane Corporation

Division Niles-Bement-Pond Company

Philadelphia, Pa.



ONE CORNER OF THEIR PLANT

For ninety-eight years

EGLESTON BROS. & CO. *of Long Islana City have been in the steel business for 98 years. Recently they built a new warehouse. They knew from long experience, the savings to be made by modern cranes. They installed Niles Cranes.*

NILES · CRANES

REPUBLIC

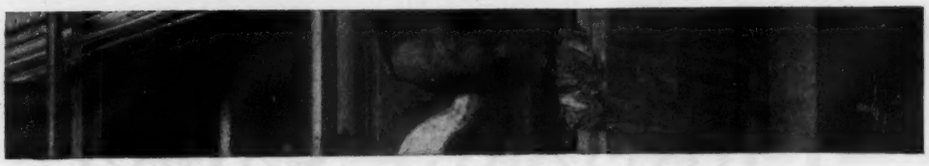
Fourteen Sales Offices

Located At Strategic Points
Are Ready To Serve You

Boston—New York—Philadelphia—Detroit—
Birmingham—Cleveland—Buffalo—St. Louis—
San Francisco — Cincinnati — Pittsburgh —
Chicago—Dallas—Denver

SHEETS—BARS—PLATES—PIPE—
PIG IRON—FORMED ROOFING PRODUCTS.

REPUBLIC IRON & STEEL COMPANY
General Offices: Republic Bldg. Youngstown, Ohio



Let a crane man and a C-H "Red Top" do it

A 36-inch C-H "Red Top" Lifting Magnet in the foundry of the Duplex Printing Press Company's plant, Battle Creek, Michigan

Eliminating unnecessary operations makes big saving

Almost uncanny—the way this C-H "Red Top" Lifting Magnet handles castings. First, lifts them out of the mold, drops them to shake out the sand and then transports them to the tumbling room. The crane man easily learned to utilize the pulling action of the magnet to get the casting in almost any position he desires. In this plant a lot of operations usually requiring "men on the ground" are done by crane and magnet without assistance. Much larger castings than the one shown in the picture are handled in the same way.

It's a big saving in time and money of course, but C-H "Red Tops" are making substantial savings throughout the metal working industry. If it's iron or steel it's pretty certain one of these magnets will handle it more economically. It's surprising the number of uses to which "Red Tops" are put.

"There is a difference in magnets"

There is greater lifting power built into C-H "Red Tops." Exclusive features of design and construction enable them to do more work in a given time.

These features and many uses that probably haven't occurred to you are described in Booklet P-23. A line from you will bring a copy to your desk.

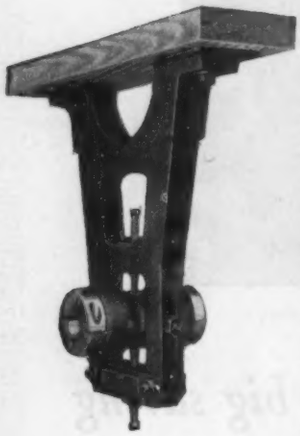
Send for Booklet P-23 and learn how they can make a substantial saving for your plant

The CUTLER-HAMMER Mfg. Co.
Pioneer Manufacturers of Electric Control Apparatus
1225 St. Paul Avenue
MILWAUKEE, WISCONSIN

CUTLER C-H HAMMER

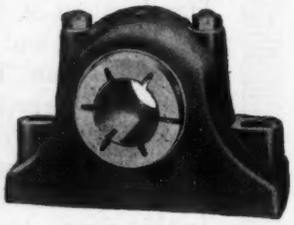
Red Top Heavy Duty Lifting Magnets

Power Saved
Lubricant Saved
Alignment Preserved
Wear Practically Eliminated
—*in Line Shafting*



Shafts *roll* in Dodge-Timken shaft hangers and pillow blocks. The rolling motion is all on hardened, ground, special Timken-made alloy steel. There is no movement against the shaft surface. And grease enclosure is perfect. Starting load, running load, and lubrication requirements must be sharply reduced.

The improvement is permanent. Timken load area, thrust capacity, and positive roll alignment keep shafts running snug and true. The little wear that causes more and more wear can find no starting place in Dodge-Timken equipment.



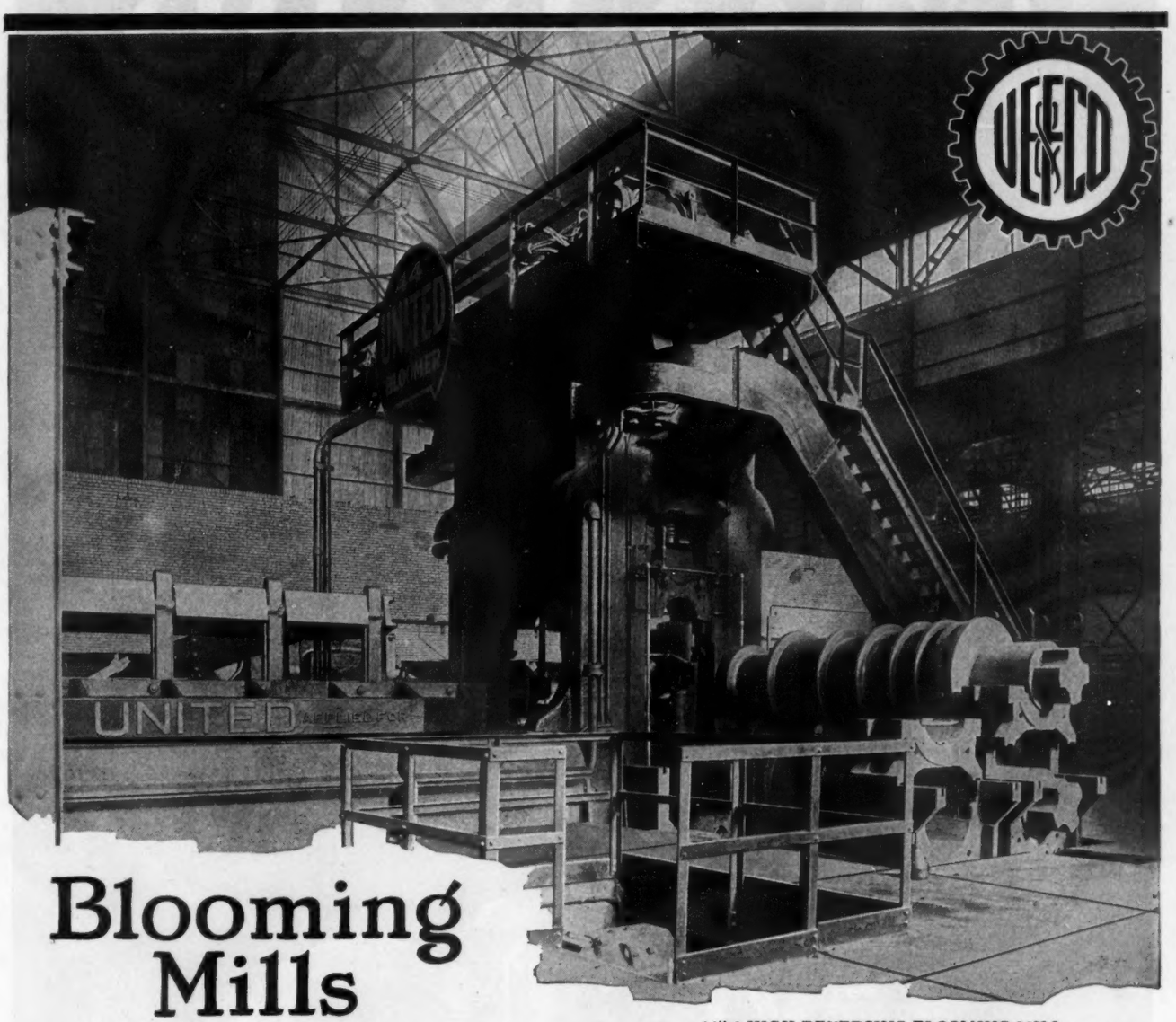
The initial cost of installing Dodge-Timken economies is trifling in itself—and a positively lucrative investment considering the savings, in power, grease, cotton waste, depreciation, time *and labor*.

THE TIMKEN ROLLER BEARING CO., CANTON, OHIO

Technical information regarding bearing sizes and their mountings can be secured from the Timken Roller Bearing Service & Sales Company's Branches located in the following cities: Atlanta, Baltimore, Boston, Buffalo, Chicago, Cleveland, Dallas, Denver, Detroit, Indianapolis, Kansas City, Los Angeles, Memphis, Milwaukee, Minneapolis, Newark, New York, Omaha, Philadelphia, Pittsburgh, Richmond, St. Louis, San Francisco, Seattle, Toronto, Winnipeg

TIMKEN
Tapered
ROLLER BEARINGS

"UNITED"



Blooming Mills

44" 2-HIGH REVERSING BLOOMING MILL
Patented and Patents Applied For

THIS is a recent installation of United equipment. It embodies the latest improvements in blooming mill practice to insure continuous uninterrupted operation. To reduce roll changing time to a minimum the rig shown was provided, which removes both top and bottom rolls and fillings from the housings at one time, then moves them sideways and a new set of rolls and fillings put in place to be moved into the housings. Operators will appreciate this feature.

In order to be sure of the largest production and lowest operating cost per ton, secure the advantage of our wide and valuable experience by insisting on United equipment for your installations.

UNITED ENGINEERING & FOUNDRY CO.
PITTSBURGH — PENNSYLVANIA

Builders of Complete Machinery Equipment for Iron, Steel & Tube Works

STANDARD PIPE MILL MACHINERY

STANDARD Products
Include

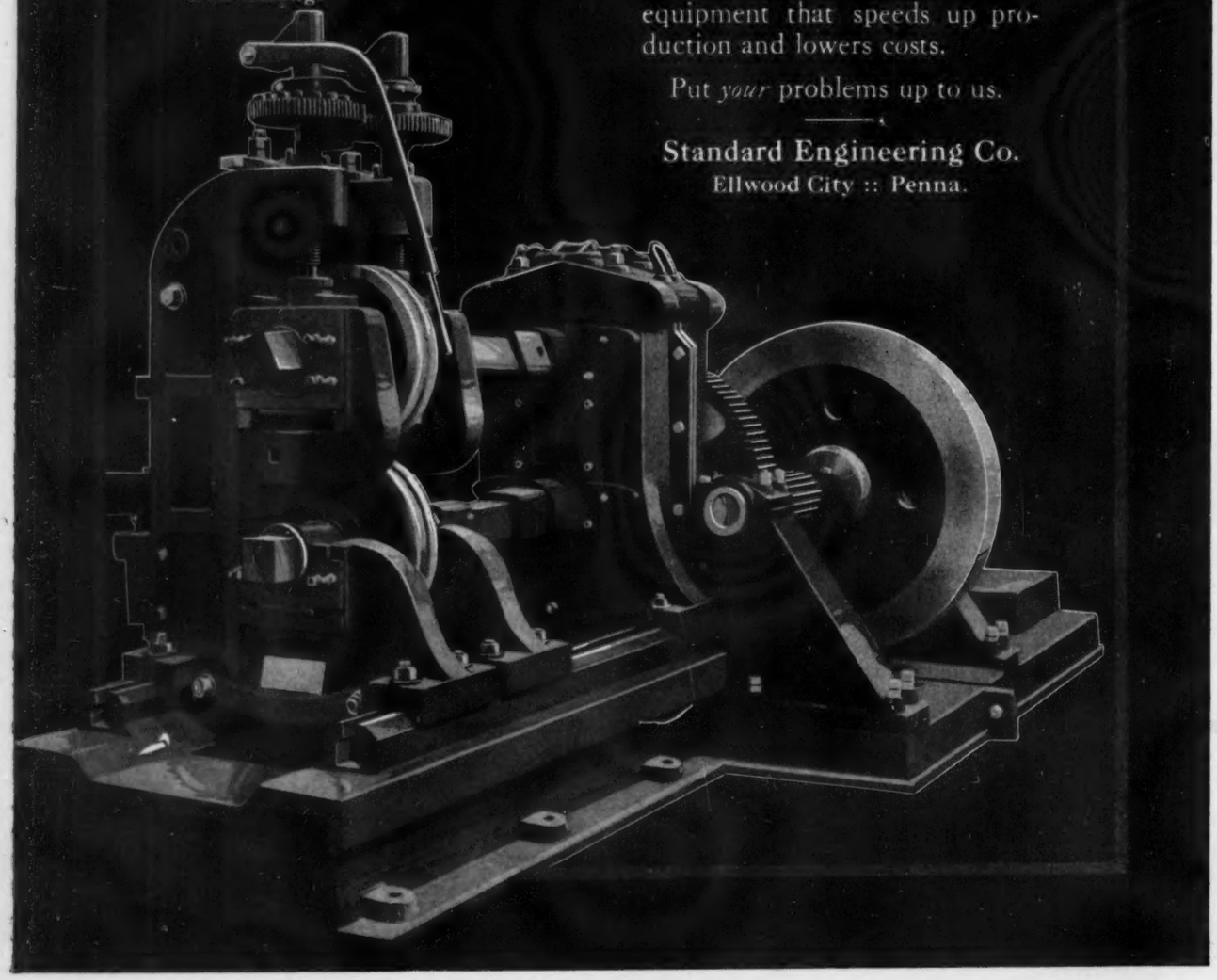
Seamless Tube Mills
Lap and Butt Welded Pipe Mills
Bar and Sheet Mills
Cold Drawing Machinery
Shears, Roll Lathes
Sand and Chilled Iron Rolls
Iron Castings

The illustration shows a 24 in. Welding Machine for the 4 in. Lap Weld Mill, Jones & Laughlin Steel Corp., Woodlawn Plant.

You can depend on **Standard** to build only good equipment—equipment that speeds up production and lowers costs.

Put *your* problems up to us.

Standard Engineering Co.
Ellwood City :: Penna.



"And do *you* like *your job?*" *he shot at me*

(Incidents That Have Pointed the Way—No. 6 of a Series)

WHEN men like their jobs it is no secret to their families and to the community in which they live. The following incident came as a personal experience to an officer and director of The American Rolling Mill Company. In telling it he said:

"A few days ago I was walking to the office when I came across a bright little chap with books under his arm. If you have never had the pleasure of walking to school with one of these little chaps on some clear, crisp morning, you have missed something. As our ways lay in the same direction, I caught step with him as he cheerily answered my 'Good morning.'

" 'Going to school?' I asked.

" 'Yes,' he said, as he measured his sturdy limbs to my stride.

" 'You like school?' was my next query.

" 'Sure thing!' he said, and his laugh had all the ring of youth.

"Where does your father work?' I boldly asked.

" 'He works for The Rolling Mill, and I'm going to work for The Rolling Mill too, when I grow up,' was the immediate response.

" 'Does your daddy like his job?' I inquired, trusting youth to give the answer without guile or flattery.

" 'Sure, he likes his job,' came the answer.

"Then the lad looked me squarely in the eyes and asked: 'Where do you work?'

"I had come my turn to be catechized, and so I stated that I, too, worked for The Rolling Mill.

" 'And do *you* like *your* job?' he shot at me.

"With this the tables were turned. It was now up to me. I had to make good with this little chap of nine years and tell him of my enthusiasm for ARMCO and all it stands for. And *believe me*, I did.

"Nothing in my life has ever inspired me more than this little encounter with the schoolboy. In the sunlight of his radiant countenance the little chap revealed a phase of industrial progress too often overlooked—the far-reaching influence of the happy, contented worker's home."

Great smokestacks, gigantic machinery, colossal holdings do not, alone, make up the realm of industry. Out of the home incentive come the great contributions to industry. Such is the influence behind the men of ARMCO who more than twenty years ago took up the task of producing a commercially pure iron.

ARMCO INGOT IRON IS USED FOR

roofing, siding, cornices, ventilators, tanks, car roofs and sides, enameled ware, culverts, pipe and tubes, fence, metal lath, caskets and grave vaults, in fact wherever durable sheets are required.

ARMCO

Write for "The Story of Commercially Pure Iron."

THE AMERICAN ROLLING MILL COMPANY, Middletown, O.

HERE is a practical, everyday working demonstration of the ductility or bending quality of "NATIONAL" Pipe. Several of the bends in this sign are of considerably shorter radii than the pipe would be required to meet according to standard specifications. They are used here, however, with safety because of the unusually good working qualities, sound welds and great strength of this pipe. Such manipulation demonstrates not only ductility but also the general dependability of "NATIONAL" Pipe for other severe services required of pipe.

As "the proof of the pudding is in the eating" so the best proof of the quality of "NATIONAL" Pipe is in the hundreds of installations similar to the one illustrated.

"NATIONAL" Bulletin No. 5 contains a number of illustrations showing different ways of bending pipe for refrigerating and various other purposes which may prove helpful to you—send for a copy today.

NATIONAL TUBE COMPANY, PITTSBURGH, PA.

DISTRICT SALES OFFICES IN THE LARGER CITIES

"NATIONAL"

The Recognized Standard of Wrought Pipe

WHEN Cleveland Cranes serve production machines, they immediately become an indispensable part of the manufacturing process itself. Your whole plant learns to depend upon Cleveland Cranes with the utmost confidence.

The Cleveland Crane & Engineering Co.
Wickliffe, Ohio

Branch Offices:

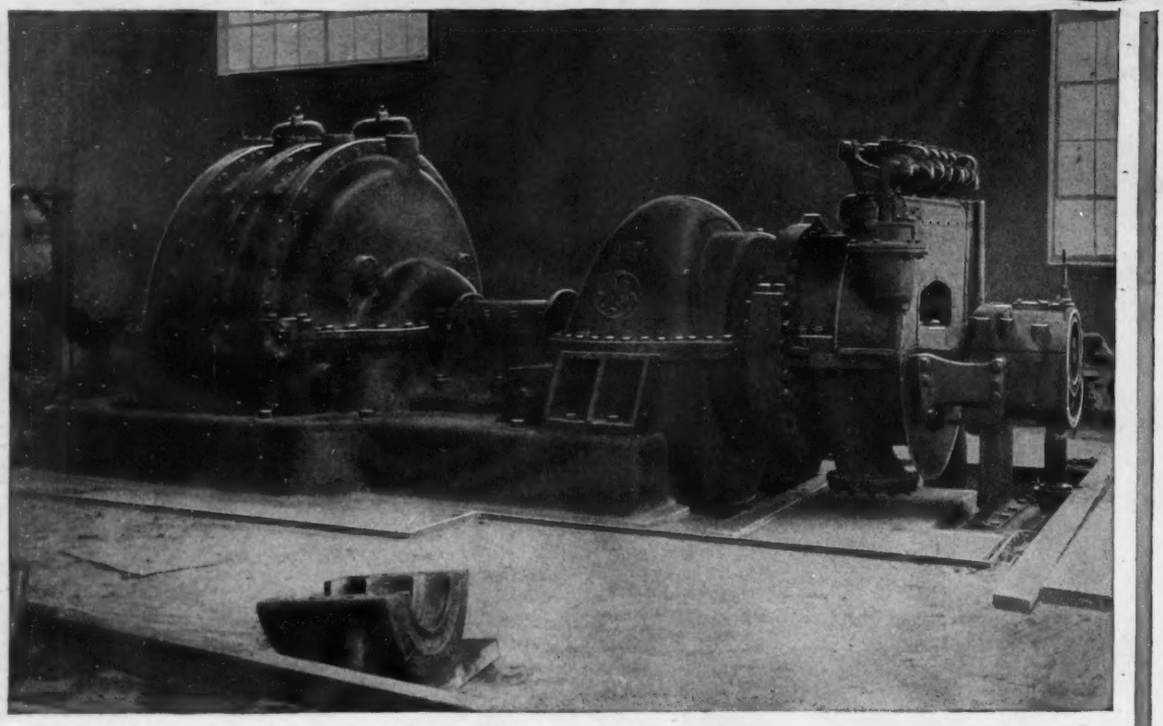
New York
30 Church Street

Pittsburgh
511 Farmer's Bank Bldg.

Chicago
557 Railway Exchange Bldg.

CLEVELAND CRANES

Installing



The new G-E blast furnace blower

The first of the new G-E Blast Furnace Blowers—a 45,000-cu. ft. unit—is here shown in the process of installation at the Mystic Iron Co., Everett, Mass. At the Lynn Works of the General Electric Company, other blowers of still larger capacity are being constructed and tested.

This new G-E Blast Furnace Blower was developed to give the Steel Industry a machine embodying these three outstanding features: 1. Reliable Mechanical Operation. 2. High Overall Efficiency. 3. Improved Pressure-volume Characteristics.

The new G-E blower is built in three sizes which cover the entire range of American blast furnace requirements. It is the blower long looked for by the steel industry—a blower which ushers in a new era in blast furnace operation. Complete details will be furnished by your nearest G-E office.

G-E Blowers represent:
In volumes and pressures—the most complete line manufactured.
In quality—the best in design, materials, and workmanship.
In performance—absolute reliability.
In operating costs—the most economical known.

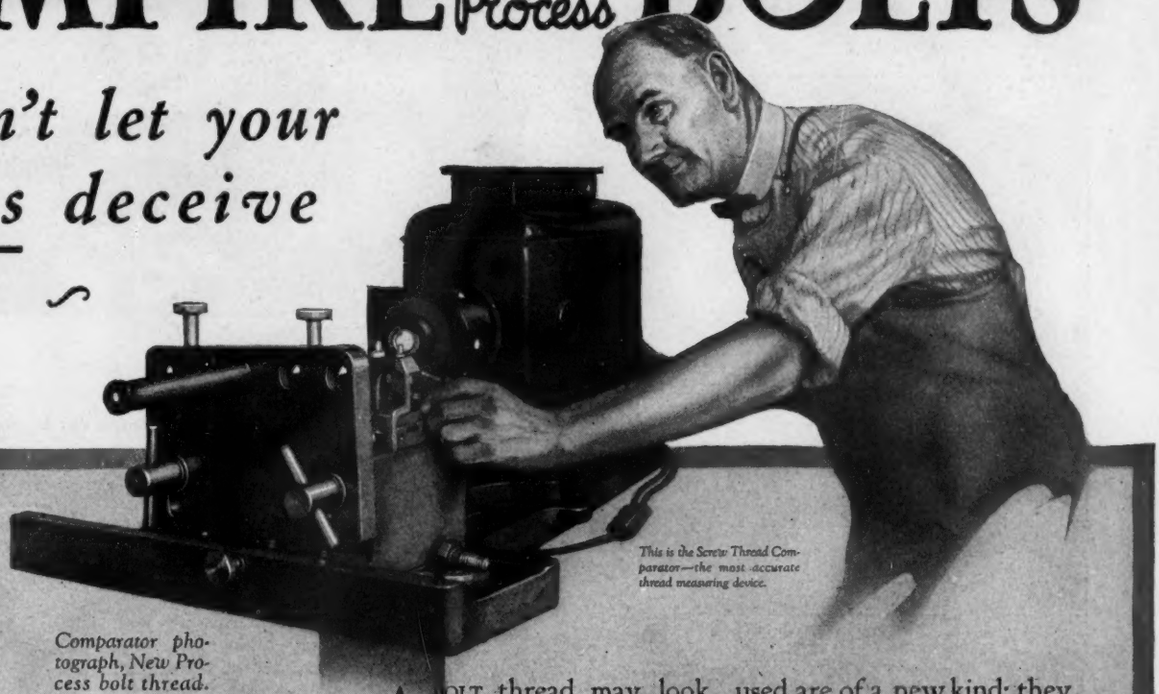
230-10

GENERAL ELECTRIC

GENERAL ELECTRIC COMPANY, SCHENECTADY, N. Y., SALES OFFICES IN ALL PRINCIPAL CITIES

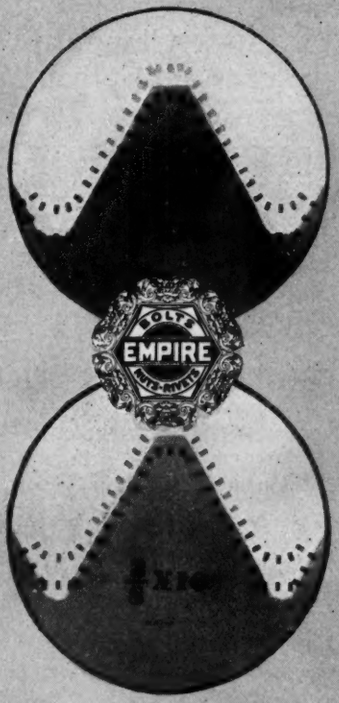
EMPIRE *New Process* BOLTS

Don't let your eyes deceive you



This is the Screw Thread Comparator—the most accurate thread measuring device.

Comparator photograph, New Process bolt thread.



Comparator photograph, hardened and ground gauge thread.

A BOLT thread may look all right, but when it strips or jams in the nut, its true character comes out.

The only trouble is that it costs money to make the discovery after the bolt is on—just as it costs money to buy bolts you can't use.

In its effect on accuracy and strength, the method by which Empire *New Process* bolts are threaded is just the reverse of cutting. The dies used are of a new kind; they *build up* the thread without removing any of the steel.

The thread tolerance does not vary. It possesses the accuracy of a hardened and ground gauge as proved by the Comparator. The blank has to be especially prepared for this new way of threading. A new and more precise type of machine tool had to be designed to make the dies. Its like is not to be found in other plants.

There is no nut made that will strip the thread of an Empire *New Process* bolt!

Empire *New Process* bolts cost about the same as any good bolts. Less, in fact, for they banish waste.

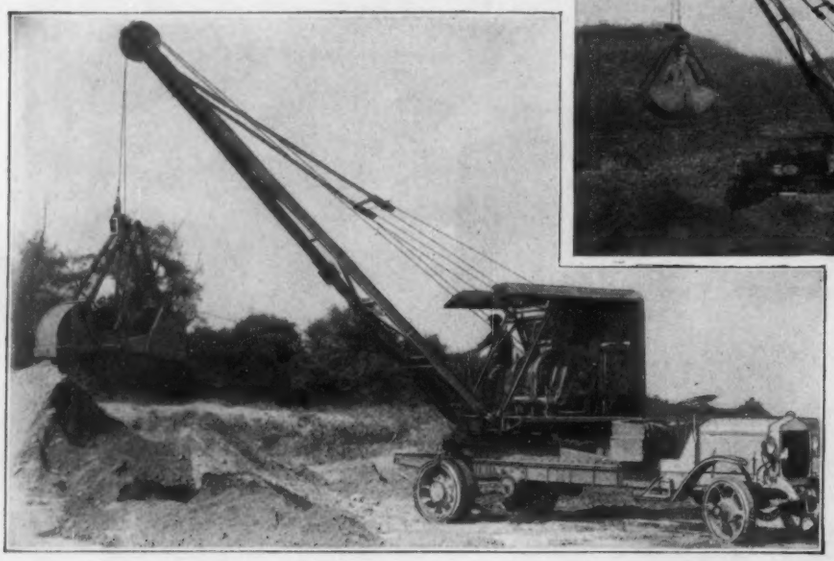
Samples for testing, if you want them.

RUSSELL, BURDSALL & WARD
BOLT & NUT COMPANY
PORT CHESTER, N.Y.

Branch Office: Straus Building	Branch Office: General Motors Bldg.	Branch Factory:	Strimple & Gillette 169 Jackson Street	Maydwell & Hartzell, Inc. 158-168 Eleventh Street
CHICAGO	**DETROIT**	**ROCK FALLS, Ills.**	**SEATTLE**	**SAN FRANCISCO**

Makers of Bolts, Nuts and Rivets Since 1845

The Truck Crane can be driven from one position or job to another instantly. It can be mounted on the chassis of practically any suitable make of 5 or 7½-ton truck, or furnished complete on truck. One P & H truck or trailer does the work of 20 to 30 men.



Loading cinders with P & H Truck Crane owned by Ward's Road & Mason Supply Co., Suffern, N. Y.

Faster Production—More Jobs—Greater Profits

Because of their extreme mobility, and their easy, fast and economical operation, P & H Truck and Trailer Cranes are especially adapted for loose material handling of all kinds. They can be quickly "spotted" in any part of the yard or plant, or can be moved from job to job without loss of time. They do the work of from 20 to 30 laborers, do it far more efficiently, and have practically no maintenance cost.

Equipped with grab bucket, magnet, grappling hook or chains, any loose materials are swiftly handled. They are sturdily built for dependable, speedy long lives of service.

The P & H Truck Crane can be mounted on the chassis of practically any suitable make of 5 or 7½-ton truck or can be furnished complete on truck. The Trailer Crane can be easily towed by any truck.

Send today for Bulletin 636-X fully describing this equipment.

HARNISCHFEGER CORPORATION
Successor to
PAWLING & HARNISCHFEGER CO.
Established in 1884
3811 National Avenue, Milwaukee, Wis.

New York Chicago Detroit Portland Seattle Charlotte Miami Philadelphia Kansas City Dallas Memphis Jacksonville Tampa Birmingham San Francisco Pittsburgh Los Angeles Indianapolis Atlanta

Warehouses and Service Stations: Philadelphia, Memphis, Jacksonville San Francisco, Los Angeles, Seattle.

Handling tile or pipe, loading and unloading—all quickly and economically accomplished by means of the P & H Truck or Trailer Crane.

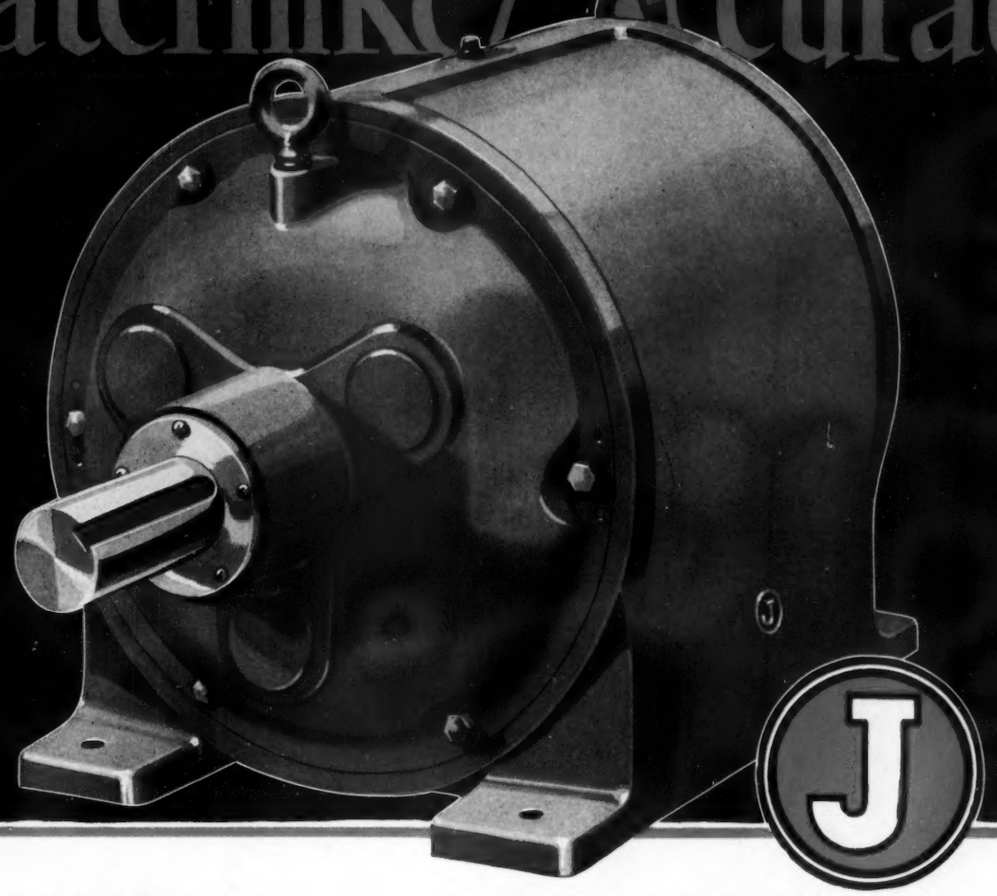
Building materials of all kinds, including big timbers, I-beams, and other structural members are readily handled by either the Truck or Trailer Crane.

For erecting, P & H Truck Cranes are particularly suited since they can be quickly driven from one location to the next without loss of time.

P&H
TRUCK & TRAILER
CRANES

Equipped with grab-bucket P & H Truck and Trailer Cranes can easily handle any loose materials—sand, gravel, coal, ashes.

BUILT *with* Watchlike Accuracy



Back of the widespread preference of technical men for Jones Speed Reducers lies a wealth of practical experience. They have tested these machines under almost every conceivable operating condition. They know that Jones Speed Reducers are designed with an extra factor of strength and are built to exceptional standards of accuracy. The gears inside the dust-proof housing operate smoothly and efficiently in a constant oil bath under ideal conditions. Maximum power is transmitted on a balanced straight line drive. Catalogue No. 26 gives full information. Write for it.

W. A. Jones Foundry & Machine Company

Main Offices and Works: 4401 West Roosevelt Road, Chicago

Branch Sales and Engineering Offices:

New York Cleveland Milwaukee Pittsburgh Buffalo Detroit Birmingham St. Louis Cincinnati

Pacific Coast Representatives: The King-Knight Company, San Francisco, Los Angeles, Seattle

Jones Speed Reducers

GEARS—*Spur, Worm, Bevel, Mitre, Spiral*

When you need gears of the above type—cut or molded—in steel, cast iron, bronze or bakelite, you will get quick, satisfactory service from Jones. In the meantime, if you have not a copy, write for Catalogue Number 30 which contains not only valuable data on gears but also on speed reducers, friction clutches, couplings, pulleys and other power transmission products. You will find it a good reference book.

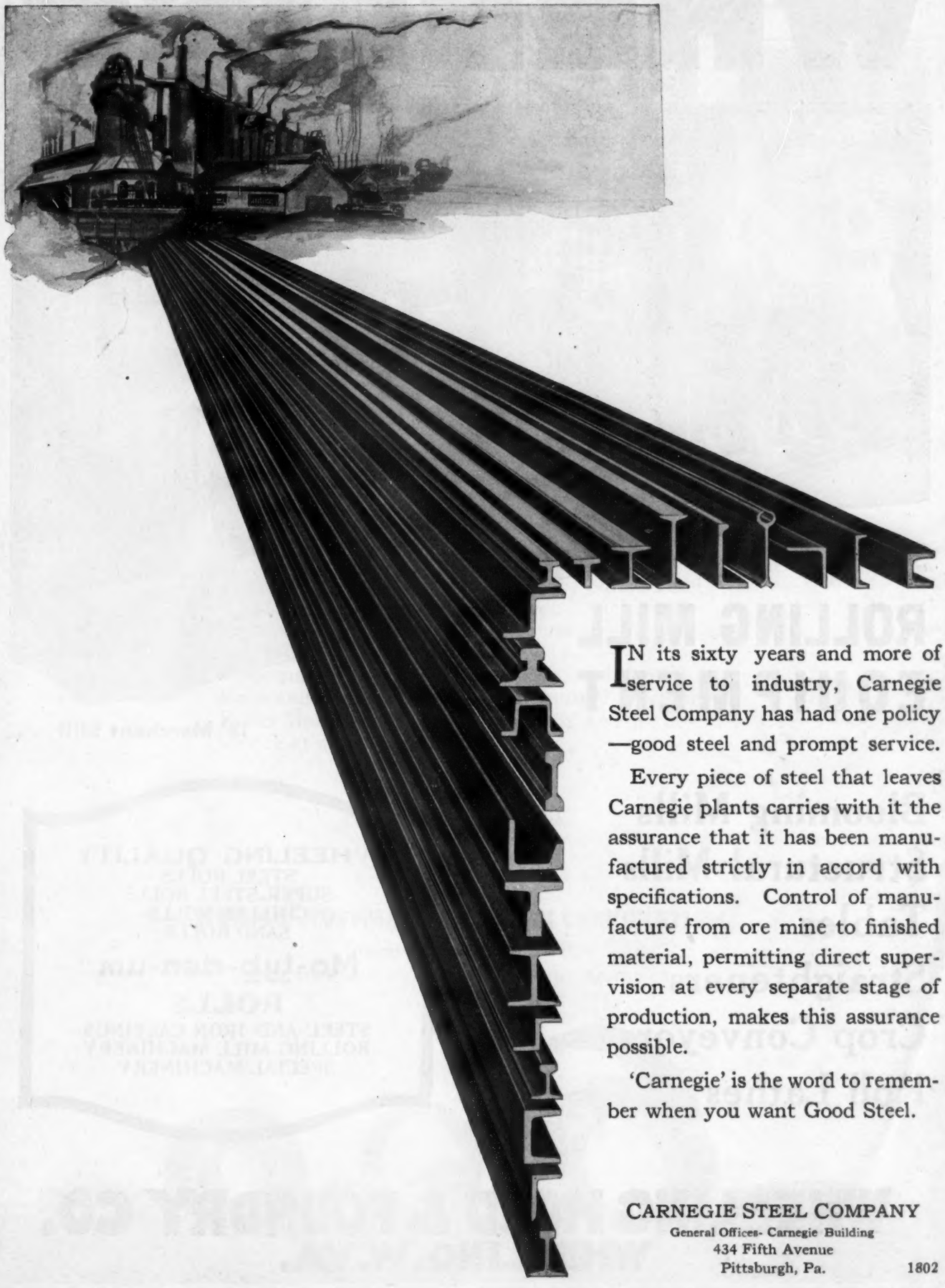
W. A. Jones Foundry & Machine Company

Main Offices and Works: 4401 West Roosevelt Road, Chicago

Branch Sales and Engineering Offices:
New York, Cleveland
Milwaukee, Pittsburgh
Buffalo, Detroit
Birmingham
Cincinnati
St. Louis

Pacific Coast Representatives:
The King-Knight Company
San Francisco
Los Angeles
Seattle

Jones Industrial Gears



IN its sixty years and more of service to industry, Carnegie Steel Company has had one policy —good steel and prompt service.

Every piece of steel that leaves Carnegie plants carries with it the assurance that it has been manufactured strictly in accord with specifications. Control of manufacture from ore mine to finished material, permitting direct supervision at every separate stage of production, makes this assurance possible.

'Carnegie' is the word to remember when you want Good Steel.

CARNEGIE STEEL COMPANY
General Offices- Carnegie Building
434 Fifth Avenue
Pittsburgh, Pa. 1802

WHEELING

ROLLING MILL EQUIPMENT

18" Merchant Mill

Blooming Mills
Structural Mills
Tables
Straighteners
Crop Conveyors
Roll Lathes

WHEELING QUALITY
STEEL ROLLS
SUPER-STEEL ROLLS
CHILLED ROLLS
SAND ROLLS
Mo-lyb-den-um
ROLLS
STEEL AND IRON CASTINGS
ROLLING MILL MACHINERY
SPECIAL MACHINERY

WHEELING MOLD & FOUNDRY CO.
WHEELING, W. VA.

"NORMA" "HOFFMANN"

PRECISION BEARINGS

Insure The Life of Your Machines

WHEN you stop to think that any machine—a passenger car, a motor truck, a machine tool, or an electric motor—carries all its load on its shaft bearings, you realize why the "life" of a machine is, and can be, only the life of its bearings.

Precision Bearings afford machinery builders and users the "life insurance" which good machines deserve and which good business dictates:—

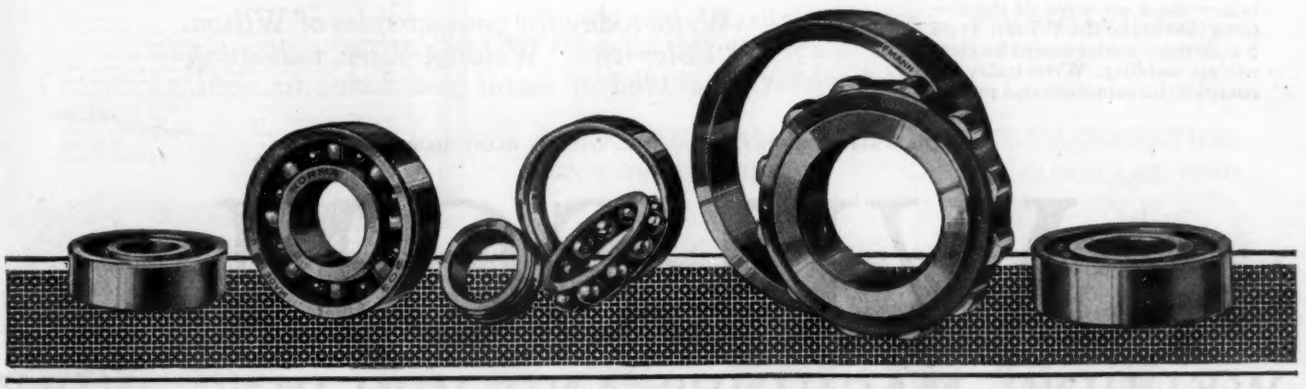
"Norma" Precision Ball Bearings for the smaller loads and higher speeds—**"Hoffmann"** Precision Roller Bearings for the larger loads and hardest service at all speeds.

You will be interested in reading Catalogs 904, 905 and 915

NORMA-HOFFMANN BEARINGS CORPORATION

Stamford-Connecticut

PRECISION BALL, ROLLER AND THRUST BEARINGS



"My Men Always *Want* Wilson Wire"

Use Wilson Type S Machine

Simple, close regulation; a *self-exciting* generator; a commutator that always shows *less temperature rise than any other part of the machine;* a simple, compact control panel; a special resistance unit which can be supplied *for reducing the welding current to as low as 25 amperes* for light work and thin gauge metals; an arc that is easy to strike and easy to maintain — these are some of the features that make the Wilson Type S a distinct achievement in electric arc welding. Write today for complete information and prices.

"I really can't afford to use any other wire than Wilson. In the first place, my men *want* Wilson Wire. They know we can get them a grade* of Wilson Wire that's just *right* for any kind of welding they have to do. In the second place, they *know* that no matter what grade*, it will run uniform right through. The result is that when we use Wilson Wire our men have no alibis, and don't need any."

**"Grade" means the analysis of the wire.*

Every man who has had any experience with Wilson Wire will tell you the same thing. He'll tell you that he can select the correct grade (analysis) of Wilson Wire for the kind of metal he's welding—and that *every rod will be just like every other rod* in the grade selected. This means practically perfect welding jobs.

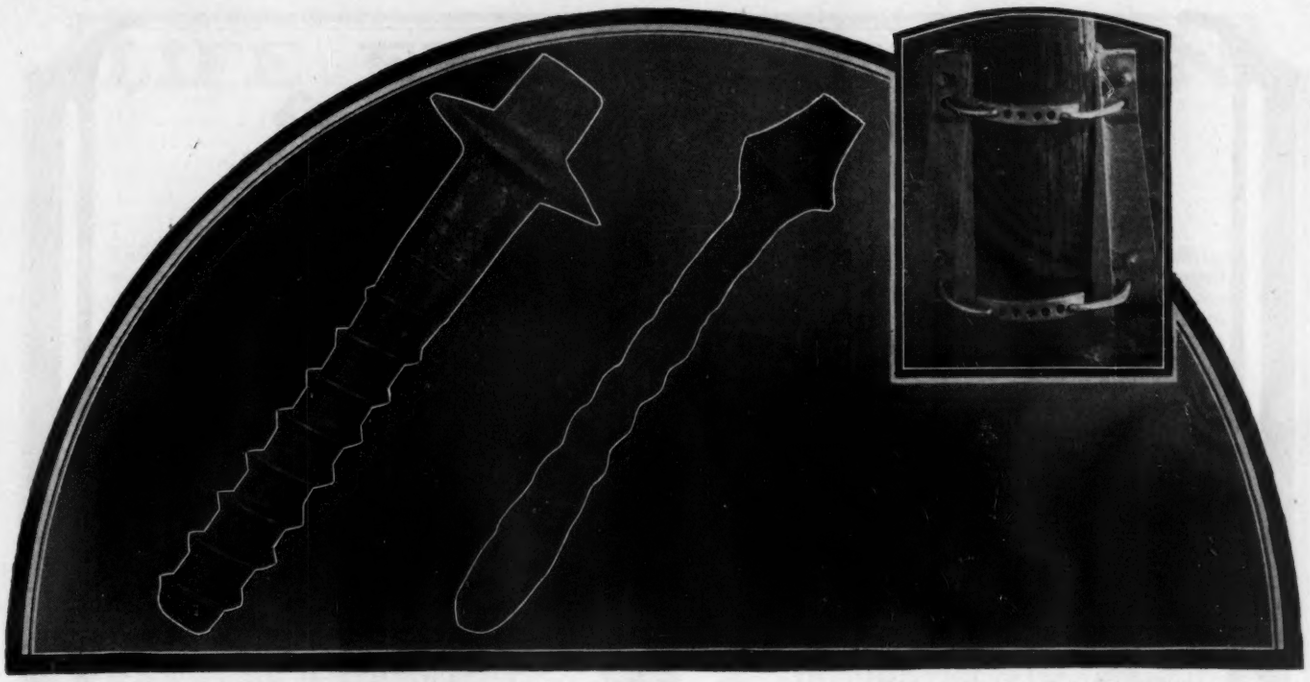
You'll find it pays to insure your welding by using Wilson Wire, because you can secure the *right* grade (analysis) for every kind of metal you weld, and, whatever the grade selected, it will run uniform throughout.

Write today for your samples of Wilson "Color-tipt" Welding Wire, indicating the kind of metal you desire to weld.

WILSON WELDER & METALS CO. INC., WILSON BLDG., HOBOKEN, N. J.

WILSON

WELDING MACHINES AND WELDING WIRE



A striking illustration of the rust resisting properties of Certified Malleable. Two screw spikes that were put in service at the same time. The one on the left is Certified Malleable.

Pole reinforcement of Certified Malleable Iron. Rust resistance combined with great strength is essential in this device.

Certificate Holders During Quarter Ending June 30th, 1926

Albany Malleable Iron Co.	Voorheesville, N. Y.
Albion Malleable Iron Co.	Albion, Mich.
American Chain Co.	Bridgeport, Conn.
American Malleable Castings Co.	Marion, O.
American Malleables Co.	Lancaster, N. Y., and Owosso, Mich.
Badger Malleable & Mfg. Co.	South Milwaukee, Wis.
Baltimore Malleable Iron & Steel Casting Co.	Baltimore, Md.
Belle City Malleable Iron Co.	Racine, Wis.
Chain Belt Co.	Milwaukee, Wis.
Chicago Malleable Castings Co.	West Pullman, Chicago, Ill.
Columbia Malleable Castings Co.	Columbia, Pa.
Columbus Malleable Iron Co., The	Columbus, O.
Danville Malleable Iron Co.	Danville, Ill.
Dayton Malleable Iron Co., The	Dayton, O., Irvington, O.
Decatur Malleable Iron Co.	Decatur, Ill.
Devlin Mfg. Co., Thomas	Philadelphia, Pa.
Eastern Malleable Iron Co., The	Naugatuck Malleable Iron Works, Naugatuck, Conn.; Bridgeport Malleable Iron Works, Bridgeport, Conn.; Troy Malleable Iron Works, Troy, N. Y.; Wilmington Malleable Iron Works, Wilmington, Del.; Vulcan Iron Works, New Britain, Conn.
Erie Malleable Iron Co.	Erie, Pa.
Federal Malleable Co.	West Allis, Wis.
Fort Pitt Malleable Iron Co.	Pittsburgh, Pa.
Fraser & Jones Co.	Syracuse, N. Y.
General Electric Co.	Erie, Pa.
Gurney Malleable Corporation	Waukesha, Wis.
Illinois Malleable Iron Co.	Chicago, Ill.
Iowa Malleable Iron Co.	Fairfield, Ia.
Kalamazoo Malleable Iron Co.	Kalamazoo, Mich.
Laconia Car Co.	Laconia, N. H.
Lakeside Malleable Castings Co.	Racine, Wis.
Link-Belt Co.	Indianapolis, Ind.
Marion Malleable Iron Works	Marion, Ind.
Moline Malleable Iron Co.	St. Charles, Ill.
National Malleable & Steel Castings Co.	Cleveland, O., Chicago, Ill., Indianapolis, Ind., Toledo, O., E. St. Louis, Ill.
Northern Malleable Iron Co.	St. Paul, Minn.
Northwestern Malleable Iron Co.	Milwaukee, Wis.
Peoria Malleable Castings Co.	Peoria, Ill.
Pittsburgh Malleable Iron Co.	Pittsburgh, Pa.
Rhode Island Malleable Iron Works	Hillsgrove, R. I.
Rockford Malleable Iron Works	Rockford, Ill.
Ross-Meehan Foundries, The	Chattanooga, Tenn.
St. Louis Malleable Casting Co.	St. Louis, Mo.
Saginaw Products Co.	Saginaw, Mich.
Standard Malleable Castings Co.	Terre Haute, Ind.
Stowell Co., The	South Milwaukee, Wis.
Superior Steel Castings Co.	Benton Harbor, Mich.
Symington Co., The	Rochester, N. Y.
Temple Malleable Iron & Steel Co.	Temple, Pa.
Terre Haute Malleable & Mfg. Co.	Terre Haute, Ind.
Trenton Malleable Iron Co., The	Trenton, N. J.
Union Malleable Iron Co., The	E. Moline, Ill.
Vermilion Malleable Iron Co.	Hoopeston, Ill.
Wagner Malleable Castings Co.	Hammond, Ind., and Beloit, Wis.
Warren Tool & Forge Co.	Warren, O.
Webster Mfg. Co., The	Chicago, Ill.
Wisconsin Malleable Iron Co.	Milwaukee, Wis.
York Mfg. Co.	York, Pa.
Zanesville Malleable Co.	Zanesville, O.

Rust Resistance

Rain, snow, mud and other corroding agents take a daily toll from vital parts of farm implements, automotive and general industrial machinery. Wherever Certified Malleables are used they will cut down repairs and maintenance costs due to these factors.

Because it is essentially one of the purest forms of iron, due to the method of "heat treating" or annealing, Certified Malleable is more resistant to rust than other forms of iron and steel.

This superior material therefore offers a combination of valuable physical properties not found in any other single product. It combines rust resistance, great strength and light weight, ease and economy in machining, toughness, ductility, and resistance to shock and abuse.

Certified Malleables are uniform in structure and other physical properties. They regularly exceed 50,000 lbs. tensile strength, 10% elongation and 30,000 lbs. yield point.

AMERICAN MALLEABLE CASTINGS ASSOCIATION
UNION TRUST BUILDING CLEVELAND, OHIO

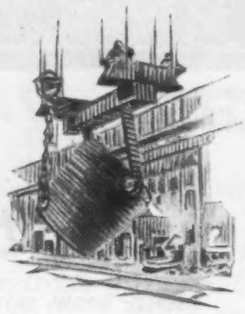
POSITIVE PHYSICAL PROPERTIES
AcA CERTIFIED

CERTIFIED-MALLEABLE CASTINGS

The Ideal Ferrosilicon

In the manufacture of steel to rigid chemical specifications it is desirable to use ferrosilicon of uniform quality, furnished in clean, large lumps, low in impurities and free from disintegration.

ELECTROMET 50% ferrosilicon is made from selected materials to meet these conditions.



LARGE STOCKS are carried at all times to meet the immediate demands of our customers.

Sole Distributors

ELECTRO METALLURGICAL SALES CORPORATION

Carbide and Carbon Building, 30 E. 42d St., New York

Electromet Brand *Ferro-Alloys and Metals*

CHROMIUM

- High Carbon Ferrochrome (maximum 6% carbon)
- Low Carbon Ferrochrome (in grades, maximum 0.10% to maximum 2.00% carbon)
- Chromium Metal
- Chromium Copper
- Miscellaneous Chromium Alloys

MANGANESE

- Standard Ferromanganese 78 to 82%
- Low Carbon Ferromanganese
- Manganese Metal
- Manganese-Silicon
- Manganese-Copper
- Miscellaneous Manganese Alloys

SILICON

- Ferrosilicon 15%
- Ferrosilicon 50%
- Ferrosilicon 75%
- Ferrosilicon 80 to 85%
- Ferrosilicon 90 to 95%
- Refined Silicon (minimum 97% silicon)
- Calcium-Silicon
- Silicon-Copper
- Manganese-Silicon
- Silico-Manganese
- Miscellaneous Silicon Alloys

ZIRCONIUM

- Silicon-Zirconium
- Nickel Zirconium
- Zirconium-Ferrosilicon

LIFE EXTENSION PLAN
for Pickling Equipment

1

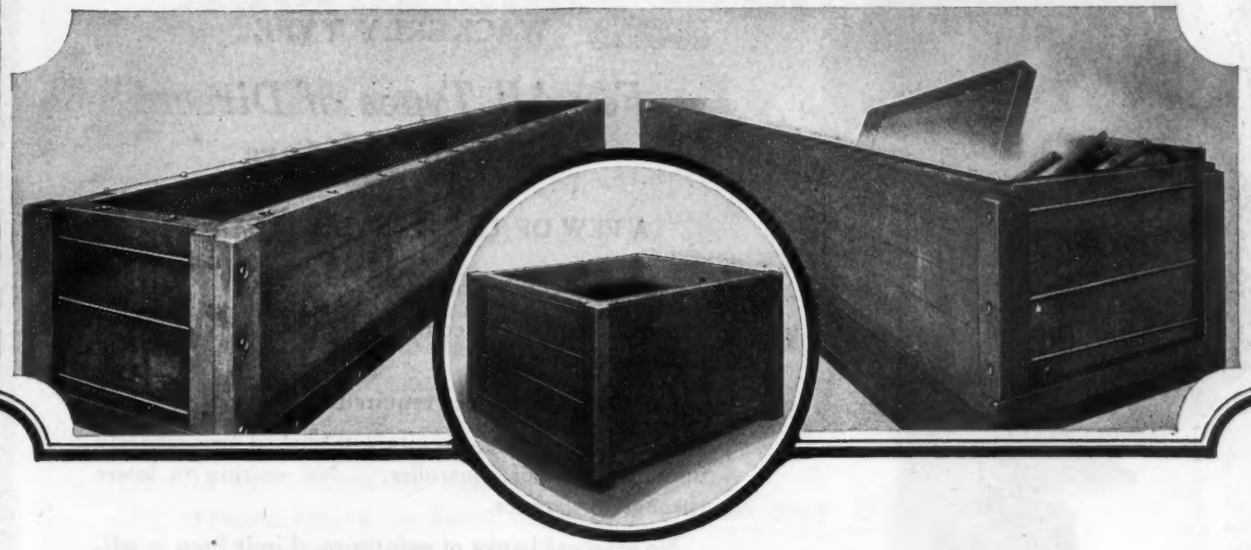
Pickling tank at Staten Island Shipbuilding Co., Mariners Harbor, Staten Island, N. Y. tied with ¾ in. Rolled Monel Metal tie-rods. Tanks containing muriatic and sulphuric acid solutions are used for pickling all types of articles before galvanizing.

2

Small Pickling Tank, fitted with ¾ in. Rolled Monel Metal tie-rods, in daily use at Staten Island Shipbuilding Co. This tank is used for pickling castings in a hydrofluoric acid solution. Constructed of 4 in. Pine. Dimensions—6½ ft. x 10½ ft. x 4 ft. 5 in.

3

Pickling Tank at Staten Island Shipbuilding Co., using ¾ in. Rolled Monel Metal tie-rods. Dimensions—20 ft. x 3 ft. 10 in. x 3 ft. 1 in. Advantage has been taken of the high tensile strength of Monel Metal in selecting tie-rods of comparatively small cross-section.



Build *long life* into pickling tanks by using Monel Metal tie-rods

WHEN pickling costs are carefully analyzed, the savings effected by the use of Rolled Monel Metal tie-rods quickly make themselves apparent.

The dependable uniformity for which rolled Monel Metal is justly famous, is the source of many pickling room economies, among which are—

1. Prevention of acid leakage due to loosened tie-rods—
2. Reduction in time lost due to shutdowns for repairs—
3. Decrease in rod-weight and cost due to Rolled Monel Metal's greater strength—
4. Longer life of tanks and equipment because of Rolled Monel Metal's dependability.

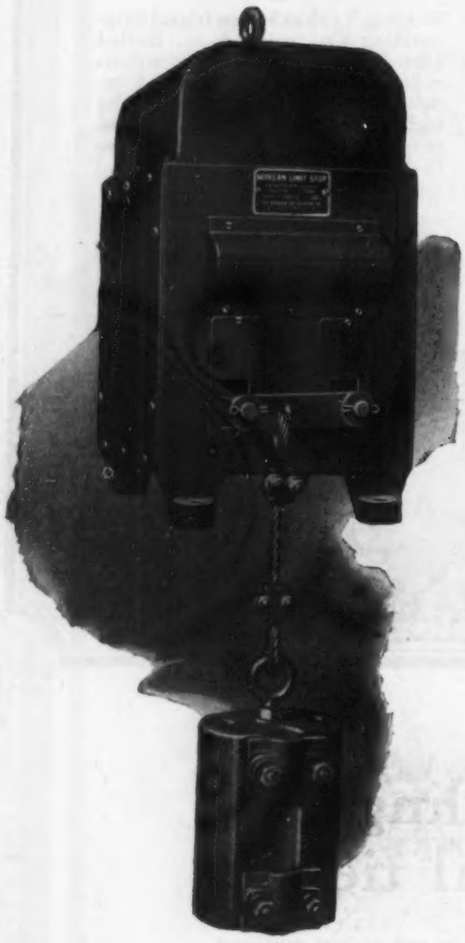
Only a few of Rolled Monel Metal's many advantages can be given here. Complete details of how Monel Metal lengthens equipment life and thus reduces pickling costs is contained in Pickling Bulletin No. 1. A copy will be mailed you on request. Send us your name today!

THE INTERNATIONAL NICKEL COMPANY
67 WALL STREET NEW YORK CITY

Monel Metal is a technically controlled Nickel-Copper alloy of high nickel content. It is mined, smelted, refined, rolled and marketed solely by The International Nickel Company. The name "Monel Metal" is a registered trademark

INCo Monel metal

MORGAN



SAFETY LIMIT STOP

WACKERLY TYPE

For All Types of Direct Current Motors

A FEW OF THE MANY ADVANTAGES

No heavy current broken by contactors.

Limit Stop can be connected up with any standard make of controller.

No extra conductors required.

Normal lowering circuits established immediately upon reversal of controller. No waiting to lower through resistance.

No external banks of resistance. Limit Stop is self-contained.

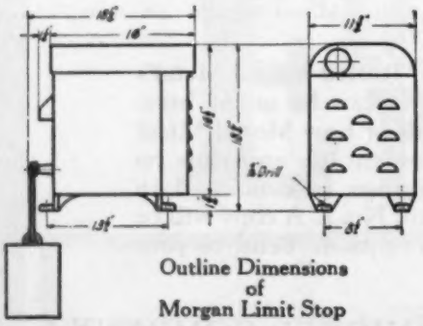
Only one swinging weight used, this being guided by one of the hoisting ropes.

Positive in action. A movement upward of weight of a fraction of an inch will actuate limit stop.

Occupies minimum floor space on trolley.

Sequence of operation of contactors obtained by simple system of levers. No cams, springs or counter-weights used.

For full particulars on this stop send for Bulletin No. 29.



Outline Dimensions of Morgan Limit Stop

A total movement of weight of less than one inch required for complete functioning of stop.

A NEVER FAILING HOIST LIMIT STOP

The Morgan Engineering Company
Alliance, Ohio, U. S. A.

CHICAGO: 122 So. Michigan Ave.
PITTSBURGH: 1420 Oliver Bldg.
NEW YORK: 30 Church St.

Designers, Manufacturers and Contractors

Electric Traveling Cranes, Rolling Mill Machinery, Forging Plant Equipment, Rock Crushers, Special Machinery for any purpose, Locomotive Repairing and Rebuilding, Locomotive Forgings, Fabricated Structural Steel.

Tensile	**120,000**
Yield Point	**102,000**
Elongation	**17.8%**
Reduction in Area	**33.4%**
Approximate Brinnel	**225**

What These Mean To Steel Users

Strength

Chrome-nickel steel possesses only 100,000 lbs. tensile, so the superior strength of Farrell's 85 with 120,000 lbs. is obvious. Use it wherever strains are severe.

Without a high yield point, high tensile is useless because working strains must be kept within the yield point limit. The high working limit of Farrell's 85 permits the re-design and lightening of parts without sacrifice of strength.

Ductility

While ductile enough not to be brittle, Farrell's 85 avoids the serious handicap of easy flowing under repeated shock that is characteristic of manganese steel. Farrell's 85 can be machined during manufacture which is also a distinct advantage.

Wear Resistance

Resistance to wear is inherent in Farrell's 85. Where strains are heavy or wear excessive you can improve service by using Farrell's 85 at a cost only slightly higher than that of ordinary castings.

The Farrell-Cheek Steel Foundry Co.

Foot of First Street, Sandusky, Ohio

Western Office: 19 S. La Salle St., Chicago

F·F FARRELL'S 85 F·F

CORRECT ESTIMATING METHODS

For Distribution of Overhead Expense during Periods of Abnormal Production

FOUNDRYMEN today are being confronted with the great problem of distribution of overhead expense during the periods of abnormal production. Before the war, very little thought was given to this subject, but in the last few years, however, considerable thought has been given to the correct application of overhead expense and particularly fixed charges.

Should fixed charges be distributed on the basis of normal operation?

If operations are below normal should a part of the fixed charges be charged to cost of production?

Should the remaining part be charged to either a reserve or the profit and loss account?

When operations are in excess of normal should the unabsorbed overhead of the previous period which is charged to the reserve be absorbed?

All these important questions and many more arise, and under such conditions foundrymen are puzzled to know which is the best line to adopt.

In the brand new, revised and enlarged second edition of **"Foundry Cost Accounting"** by Robert E. Belt, every commercial phase of this great subject, which is so directly applicable to the foundry industry due to the character of the product, and the extreme fluctuations in demand, is explained.

YOU can solve all your problems with the information contained in **"Foundry Cost Accounting"** as the systems described have been developed especially for foundry use and may be adapted to any foundry, large or small, whether melting iron, steel or nonferrous metals.

Send in your order NOW for a copy of this valuable book.

Price, Postpaid

$6.00 in the United States and Canada 30s. in all other countries
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Enclosed is { $6.00 / 30s. } for which please send, all charges prepaid, one copy of the second edition of **"Foundry Cost Accounting"** by Robert E. Belt, C. P. A.

Name.....

Address.....

161-IFAD

ANACONDA PHOSPHOR BRONZE

WITHSTANDS BENDING and FRICTION

PREVENTS CRACKING and SPARKING

RESISTS ABRASION and CORROSION

ANACONDA Phosphor Bronze possesses well recognized physical characteristics which make it superior to commercial bronzes and highly desirable for manufactured products that must retain elasticity and resistance to mechanical wear.

Practical experience and research knowledge, acquired during one hundred years of continuous operation, enable the technical staff of The American Brass Company to make helpful, definite recommendations as to the Phosphor Bronze alloy and temper best suited for any particular use.

Anaconda Phosphor Bronze is made in every variety of Sheets, Rods, Wire and Tubes, and can be secured through leading distributors of metal products.

THE AMERICAN BRASS COMPANY

GENERAL OFFICES: WATERBURY, CONNECTICUT

New York, Chicago, Boston
Philadelphia, Providence, Pittsburgh
Cleveland, Detroit, Cincinnati
St. Louis, New Orleans, San Francisco

ANACONDA
from mine to consumer

Mills and Factories:
Ansonia, Conn., Torrington, Conn.
Waterbury, Conn., Buffalo, N. Y.
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In Canada: ANACONDA AMERICAN BRASS LIMITED, NEW TORONTO, ONTARIO

RAMBLINGS *of* P. T. SANDSLINGER

The magazine man sure knew his stuff when he urged me to advertise for a job. I didn't know that good help was so scarce.

I'm working in the Tarrant Jobbing Foundry now—making good money and lots of it for the boss. Fellows, that's the only way to hold a good job—make money for the boss and he'll see that you keep some for yourself.

Early Monday morning the big boss showed me a mold that took two molders and two helpers 8 hours to finish—it cost $26.00 for labor alone.

The boss said: "P.T., there's your flask—let's see what you can do." So I took my three helpers and we rammed the flask—24'x6'x1' in one hour by Western Union Time and all it cost was $3.79 for the whole works.

The boss looked it over and said: "P.T., that's sure going some. You made a better mold and we'll save over $11,000.00 this year on labor alone."

Beardsley & Piper Co.
2541 N. Keeler Ave.
Chicago

"It's *true* white pine"

"This Sugar Pine is the real stuff. I know by the way it works—by the 'feel' of it under the tool. No mistake about that texture, and that close, even grain. In fact, I'd have taken it for the same old white pine I have used ever since I started making patterns thirty years ago."

Old familiar qualities and characteristics plainly tell the pattern maker that Sugar Pine is the real stuff. But that is not half the story. Government foresters and wood technologists all affirm that Sugar Pine is *true* white pine.

Write us for this proof—interesting reading, by the way—also the testimony of wood-workers on the suitability and economy of Sugar Pine for patterns.

Also ask for information on prices, deliveries, available stocks and grades to use.

SUGAR PINE SALES COMPANY
681 Market Street • San Francisco

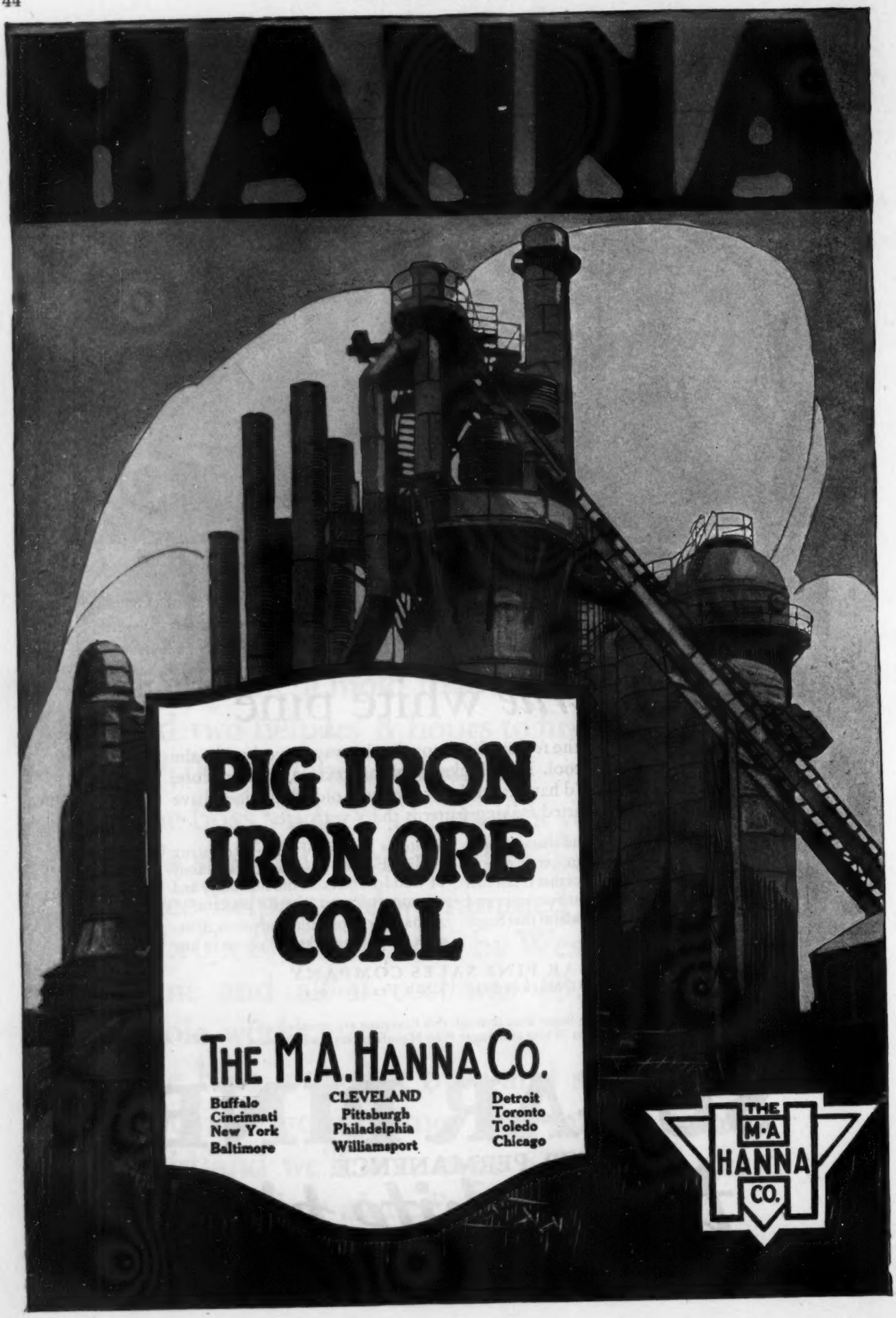
[Mills selling Sugar Pine through this Company are members of the California White and Sugar Pine Manufacturers Association]

SUGAR PINE

FOR PERMANENCE

true white pine

100


HANNA
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IRON ORE
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Cincinnati
New York
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CLEVELAND
Pittsburgh
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Detroit
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HANNA
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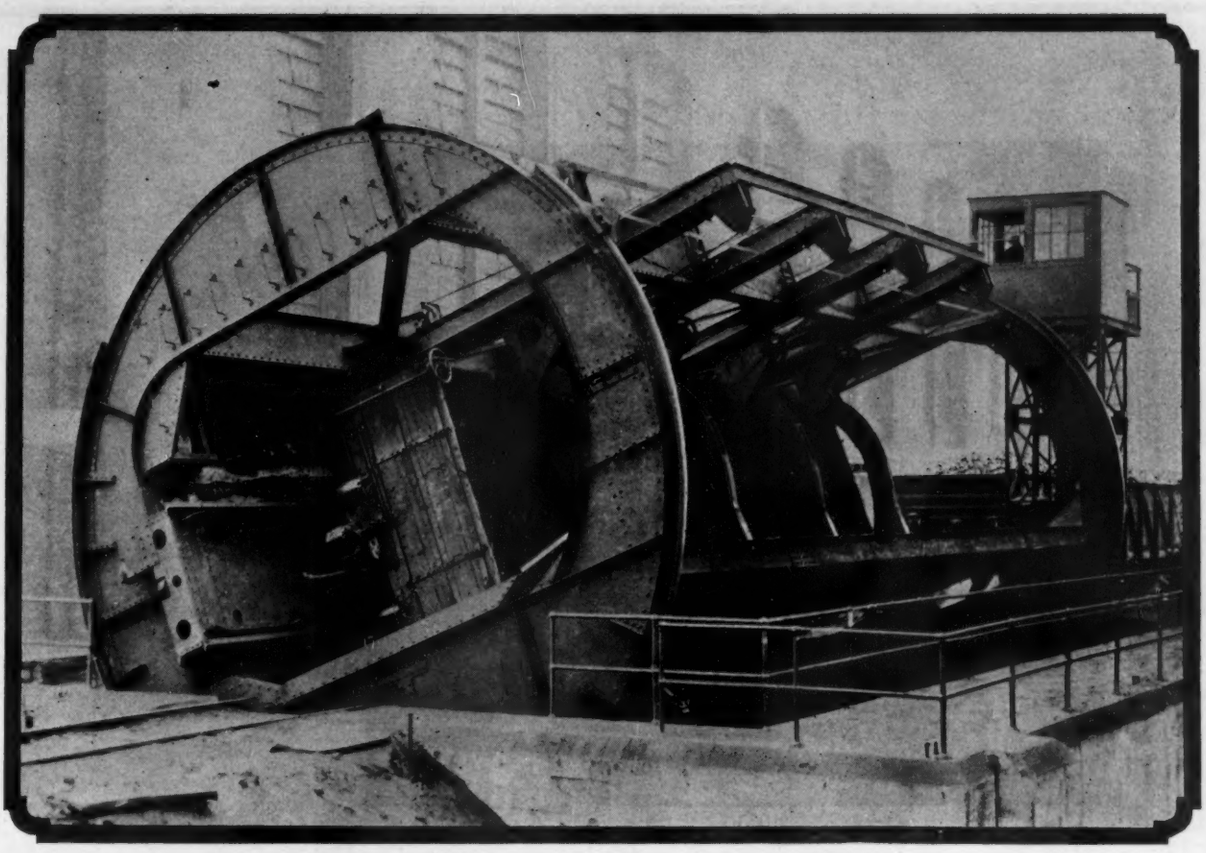

Where the unloading cost is only $.017 per ton!

Not only that, but the W-S-M Revolving car dumper saved $11,160 per month!

This equipment unloads 120,000 tons per month in 300 hours operating time and handles all sizes and types of cars.

It eliminates demurrage charges and unloads cars rapidly even if frozen.

These are some of the advantages obtained by usingthe W-S-M Revolving Car Dumper. Our engineering department will gladly go into further details.

THE WELLMAN-SEAVER-MORGAN CO.

ENGINEERS CONSTRUCTORS MANUFACTURERS

Cleveland, Ohio

Why Tie Up Capital?

WHETHER by truck or by rail, Ryerson shipments will be on their way to you within a few hours after you give the order.

We have the steel and can ship at once—so why tie up your capital in large stocks subject to depreciation and waste.

Buy only for your current requirements and let Ryerson carry the load.

Vacationing Soon?
It's easy to get away when orders are placed with Ryerson. You can depend upon prompt accurate shipments.

Bars	Turnbuckles	Wire	Reinforcing Steel
Shapes	Babbitt	Chain	Firmtread Plates
Structurals	Plates	Forging Bars	Alloy Steel
Rails	Sheets	Billets	Tool Steel
Shafting	Rivets	Boiler Tubes and Fittings	Small Tools
Strip Steel	Bolts		Machinery, etc.

Write for the Journal and Stock List—the "key" to Immediate Steel.

JOSEPH T. RYERSON & SON INC.
ESTABLISHED 1842

PLANTS: CHICAGO ST. LOUIS DETROIT NEW YORK MILWAUKEE CINCINNATI BUFFALO BOSTON

REPRESENTATION IN: DENVER LOUISVILLE SAN FRANCISCO JERSEY CITY MINNEAPOLIS TULSA HOUSTON LOS ANGELES NEWARK

RYERSON STEEL-SERVICE

Die-section Department

CASTING steel dies calls for accuracy and precision which no other field of casting demands. The extreme care that is given to the preparation of the molds, pouring and finishing, has earned the recognition of a growing list of manufacturers who depend upon us exclusively for this type of work.

THE INDUSTRIAL STEEL CASTING COMPANY ✦ ✦ TOLEDO, OHIO

INDUSTRIAL STEEL CASTINGS

Electric Cast Steel ✦ Electrically Heat Treated

BIN GATES (Blast Furnace)
Freyn Engineering Co., 310 S. Michigan Ave., Chicago, Ill.

BLANKS (Rawhide Gear)
Chicago Rawhide Mfg. Co., The, 1305 Elston Ave., Chicago, Ill.

BLANKS (Ring, Gear and Sprocket)
Akron-Selle Co., Akron, O.
Strong Steel Foundry Co., 33 Norris St., Buffalo, N. Y.

BLAST FURNACES—See FURNACES (Blast)

BLOWERS
General Electric Co., Schenectady, N. Y.
Ingersoll-Rand Co., 11 Broadway, New York City.
Spencer Turbine Co., Hartford, Conn.

BLOWERS (Pressure)
Spencer Turbine Co., Hartford, Conn.

BLOWERS (Rotary Positive)
Connellsville Blower Co., The, Connersville, Ind.
Roots, P. H. & F. M., Co., Connersville, Ind.

BLOW PIPES (Brazing, Welding, Cutting, Etc.)
Oxweld Acetylene Co., 30 E. 42nd St., New York City.

BLUE PRINTING MACHINERY
Pease, C. F., The, 853 N. Franklin St., Chicago, Ill.

BLUE PRINT PAPER
Pease, C. F., Co., The, 853 N. Franklin St., Chicago, Ill.

BOILER HEADS
Bethlehem Steel Co., Bethlehem, Pa.

BOILERS AND SUPERHEATERS
Babcock & Wilcox Co., The, 85 Liberty St., New York City.
Sotter Bros., Inc., Pottstown, Pa.

BOILERS (Waste Heat)
Babcock & Wilcox Co., The, 85 Liberty St., New York City.
Freyn Engineering Co., 310 S. Michigan Ave., Chicago, Ill.

BOILERS (Water Tube)
Babcock & Wilcox Co., The, 85 Liberty St., New York City.

BOILER TUBES — See TUBES (Boiler)

BOILER WALL COATING
Celite Products Co., 11 Broadway, New York City.

BOLT AND NUT MACHINERY
Landis Machine Co., Waynesboro, Pa.
National Machinery Co., Tiffin, O.

BOLT FORGING MACHINERY
Pawtucket Mfg. Co., Pawtucket, R. I.

BOLTS
Bethlehem Steel Co., Bethlehem, Pa.
Clark Bros. Bolt Co., Milldale, Conn.
Illinois Steel Co., 208 S. La Salle St., Chicago, Ill.
Lake Erie Bolt & Nut Co., 915 E. 63rd St., Cleveland, O.
Oliver Iron & Steel Corp., So. 10th and Muriel Sts., Pittsburgh, Pa.
Rockford Bolt Co., 220 Mill St., Rockford, Ill.
Russell, Burdsall & Ward Bolt & Nut Co., Port Chester, N. Y.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.

BOLTS (Heat Treated)
Bethlehem Steel Co., Bethlehem, Pa.
Oliver Iron & Steel Corp., So. 10th and Muriel Sts., Pittsburgh, Pa.
Wheelock, Lovejoy & Co., Inc., 128 Sidney St., Cambridge, Mass.

BOOKS (Technical)
Penton Publishing Co., Cleveland, O.

BORING MACHINES (Horizontal)
Universal Boring Machine Co., Hudson, Mass.

BOSH PLATES (Copper)
Lawrenceville Bronze Co., 518 Bessemer Bldg., Pittsburgh, Pa.

BOXES (Carbonizing)
Farrell-Cheek Steel Foundry Co., Sandusky, O.

BOXES (Open Hearth Charging)
Strong Steel Foundry Co., 33 Norris St., Buffalo, N. Y.
Wellman-Seaver-Morgan Co., The, 7025 Central Ave., Cleveland, O.

BOXES (Steel)
Cleveland Wire Spring Co., The, 1281 E. 38th St., Cleveland, O.

BOXES (Tote)
Truscon Steel Co., Youngstown, O.

BRAKES (Electric)
Clark Controller Co., The, 1146 E. 152nd St., Cleveland, O.
Cutler-Hammer Mfg. Co., The, Milwaukee, Wis.
Electric Controller & Mfg. Co., 2700 E. 79th St., Cleveland, O.
General Electric Co., Schenectady, N. Y.

BRAKES (Metal Forming)
Streine Tool & Mfg. Co., The, New Bremen, Ohio.

BRASS
Copper & Brass Research Ass'n., 25 Broadway, New York City.
Williams & Co., Inc., 915—937 Pennsylvania Ave., Pittsburgh, Pa.

BRICK (Silica, Magnesia, Chrome, Fire Clay)
General Refractories Co., 117 S. 16th St., Philadelphia, Pa.
Harbison Walker Refractories Co., Farmers Bank Bldg., Pittsburgh, Pa.
Lavino, E. J., & Co., Bullitt Bldg., Philadelphia, Pa.
Soisson, Jos., Fire Brick Co., Connellsville, Pa.
Stowe-Fuller Refractories Co., 1659 Union Trust Bldg., Cleveland, O.
U. S. Refractories Corp., Mt. Union, Pa.

BRICK INSULATING—See INSULATING BRICK

BRIDGE CRANES (Ore and Coal Handling)
McMyler-Interstate Co., The, Bedford, O.
Wellman-Seaver-Morgan Co., The, 7025 Central Ave., Cleveland, O.

BRIDGES, BUILDINGS VIADUCTS, STACKS (Steel)
American Bridge Co., 71 Broadway, New York City.
Belmont Iron Works, 22nd and Washington Ave., Philadelphia.
Blaw-Knox Co., 602 Farmers Bank Bldg., Pittsburgh, Pa.
Blystone Mfg. Co., Ironton St., Cambridge Springs, Pa.
Eichleay, John, Jr., Co., S. 20th and Wharton, Pittsburgh, Pa.
McClintic-Marshall Co., Oliver Bldg., Pittsburgh, Pa.
Morgan Engrg. Co., The, Alliance, Ohio.
Mt. Vernon Bridge Co., Mt. Vernon, O.
Phoenix Bridge Co., 20 S. 15th St., Philadelphia, Pa.
Steel Plate Products Co., Pottstown, Pa.
Truscon Steel Co., Youngstown, O.

BRONZE (Centrifugally Cast)
Penn Mold & Mfg. Co., Wheeling Trust Bank Bldg., Wheeling, W. Va.

BRONZE (Corrosive Resisting)
Hills-McCanna Co., 2025 Elston Ave., Chicago, Ill.

BRONZE (High Tensile)
Hills-McCanna Co., Elston Ave., Chicago, Ill.

BRONZE (Manganese)
Bethlehem Steel Co., Bethlehem, Pa.

BUCKETS (Clam Shell)
Blaw-Knox Co., 602 Farmers Bank Bldg., Pittsburgh, Pa.
Brosius, Edgar E., 223 Fourth Ave., Pittsburgh, Pa.
Browning Crane Co., E. 162nd and Waterloo Rd., Cleveland, Ohio.
Wellman-Seaver-Morgan Co., The, 7025 Central Ave., Cleveland, O.
Williams, G. H., Co., 611 Haybarger Lane, Erie, Pa.

BUCKETS (Clam Shell, Orange Peel, Drag Line, Grab)
McMyler Interstate Co., Bedford, O.

BUCKETS (Dumping)
Atlas Car & Mfg. Co., 1140 Ivanhoe Rd., Cleveland, O.

BUCKETS (Elevator)
Hendrick Mfg. Co., 43 Dundaff St., Carbondale, Pa.

BUCKETS (Grab)
Blaw-Knox Co., 602 Farmers Bank Bldg., Pittsburgh, Pa.
Brosius, Edgar E., 223 Fourth Ave., Pittsburgh, Pa.
Brown Hoisting Machinery Co., 4403 St. Clair Ave., Cleveland, O.
Browning Crane Co., E. 162nd and Waterloo Rd., Cleveland, O.
Harnischfeger Corp., 38th & National, Milwaukee, Wis.
Link-Belt Co., 910 So. Michigan Ave., Chicago, Ill.
Orton Crane & Shovel Co., 608 S. Dearborn St., Chicago, Ill.
Williams, G. H., Co., 611 Haybarger Lane, Erie, Pa.

BUILDINGS (Steel)—See BRIDGES, BUILDINGS AND VIADUCTS

BULLDOZERS
Beatty Machine & Mfg. Co., Hammond, Ind.
Logemann Brothers Co., 3126 Burleigh St., Milwaukee, Wis.
Long & Allstatter Co., Hamilton, O.

BURNERS (Acetylene) — See TORCHES AND BLOWERS (Acetylene, Blow, Oxyacetylene)

BURNERS (Blast Furnace and Coke Oven Gas)
Freyn Engineering Co., 310 S. Michigan Ave., Chicago, Ill.

BURNERS (Fuel, Oil, Gas and Combination)
Liquid Fuel Engineering Co., The, 6565 Russell St., Detroit, Mich.
Strong, Carlisle & Hammond Co., The, 326 Frankfort Ave., Cleveland, O.

BURNERS (Oil)
Best, W. N., Corp., 11 Broadway, New York City.
Hauck Mfg. Co., 114 Tenth St., Brooklyn, N. Y.

BY-PRODUCT PLANTS
Koppers Co., The, Union Trust Bldg., Pittsburgh, Pa.

CAN MAKING MACHINERY
Bliss, E. W., Co., 53rd St. and 2nd Ave., Brooklyn, N. Y.

CARBON BURNING APPARATUS
Oxweld Acetylene Co., 30 E. 42nd St., New York City.

CAR DUMPERS (Coal, Ore and Ash Handling Machinery)
Link-Belt Co., 910 S. Michigan Ave., Chicago, Ill.
McMyler-Interstate Co., The, Bedford, O.
Wellman-Seaver-Morgan Co., The, 7025 Central Ave., Cleveland, O.

CARS (Industrial and Mining)
Atlas Car & Mfg. Co., 1140 Ivanhoe Rd., Cleveland, O.
Bethlehem Steel Co., Bethlehem, Pa.

CARS (Ingot and Open Hearth Charging)
Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa.
Pennsylvania Engineering Works, New Castle, Pa.

CASTINGS (Acid Resistant)
Alcumite Corp., The, Dayton, O.

CASTINGS (Alloy Steel)
Alcumite Corp., The, Dayton, O.
Bethlehem Steel Co., Bethlehem, Pa.
Chicago Steel Foundry Co., Kedzie Ave. and 37th St., Chicago, Ill.
Cincinnati Steel Castings Co., The, Queen City & Spring Grove Aves., Cincinnati, O.
Electro-Alloys Co., The, Elyria, O.
Farrell-Cheek Steel Foundry Co., Sandusky, O.
Industrial Steel Casting Co., Toledo, O.
Nugent Steel Castings Co., 31 & Wood Sts., Chicago, Ill.
Sivyer Steel Casting Co., Milwaukee, Wis.
Stroh Steel Hardening Process Co., Westinghouse Bldg., Pittsburgh, Pa.
Treadwell Engineering Co., Easton, Pa.
Union Steel Casting Co., 62nd and Butler Sts., Pittsburgh, Pa.

CASTINGS (Bessemer Iron)
Valley Mould & Iron Corp., Sharpsville, Pa.

CASTINGS (Brass)
Ohio Brass Co., Mansfield, O.

CASTINGS (Brass, Bronze, Copper, Aluminum)
Bethlehem Steel Co., Bethlehem, Pa.
Enterprise Brass Works, Muskegon, Mich.
Hills-McCanna Co., 2025 Elston Ave., Chicago, Ill.
Keystone Bronze Co., 39th St., Pittsburgh, Pa.
Lawrenceville Bronze Co., 518 Bessemer Bldg., Pittsburgh, Pa.
Mesta Machine Co., Homestead, Pa.
Metal & Alloy Specialties Co., Inc., 1870 Elmwood Ave., Buffalo, N. Y.

CASTINGS (Chemical)
Alcumite Corp., The, Dayton, O.

CASTINGS (Electric Steel)
Acme Steel & Malleable Iron Works, Inc., 245 Military Rd., Buffalo, N. Y.
Chicago Steel Foundry Co., Kedzie Ave. & E. 37th St., Chicago, Ill.
Cincinnati Steel Castings Co., The, Queen City & Spring Grove Aves., Cincinnati, O.
Crucible Steel Castings Co., The, Almira and W. 84th St., Cleveland, O.
Farrell-Cheek Steel Foundry Co., Sandusky, O.
Industrial Steel Casting Co., Toledo, O.
Maynard Electric Steel Castings Co., 2-12 Kilbourn Rd., Milwaukee, Wis.
Nugent Steel Castings Co., 31 & Wood Sts., Chicago, Ill.
Pittsburgh Electric Furnace Corp., P. O. Box 1125, Pittsburgh, Pa.
Racine Steel Castings Co., Racine, Wis.
Sivyer Steel Casting Co., Milwaukee, Wis.
West Steel Casting Co., 805 E. 70th St., Cleveland, O.

CASTINGS (Gray Iron)
Adamson Machine Co., The, Akron, O.
Bethlehem Steel Co., Bethlehem, Pa.
Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa.
Cascade Foundry Co., 19th & Plum Sts., Erie, Pa.
Cyclops Foundry Co., 1503 Union Bank Bldg., Pittsburgh, Pa.
Forest City Foundry & Manufacturing Co., The, 1220 Main Ave., Cleveland, O.
Lake Shore Engine Works, Marquette, Mich.
Link-Belt Co., 910 So. Michigan Ave., Chicago, Ill.
Mackintosh-Hemphill Co., Pittsburgh, Pa.
Midvale Co., The, Nicetown, Philadelphia, Pa.
Monessen Foundry & Machine Co., Monessen, Pa.
National Roll & Foundry Co., The, Avonmore, Pa.
Pacific Foundry Co., 19th and Treat Aves., San Francisco, Cal.
Pennsylvania Engineering Works, New Castle, Pa.

See Index to Advertisements for Pages Containing Advertisements of Companies Listed Above

Sand - Chilled Steel - Alloy

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The National Roll & Foundry Co.

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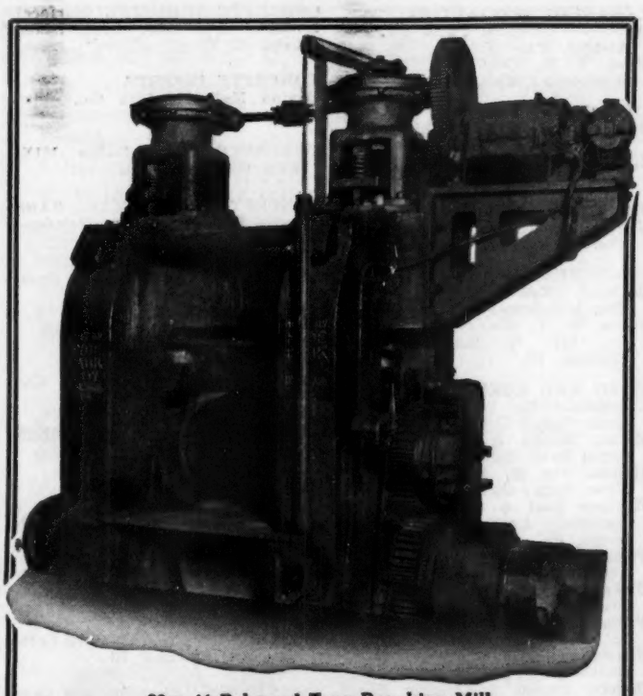

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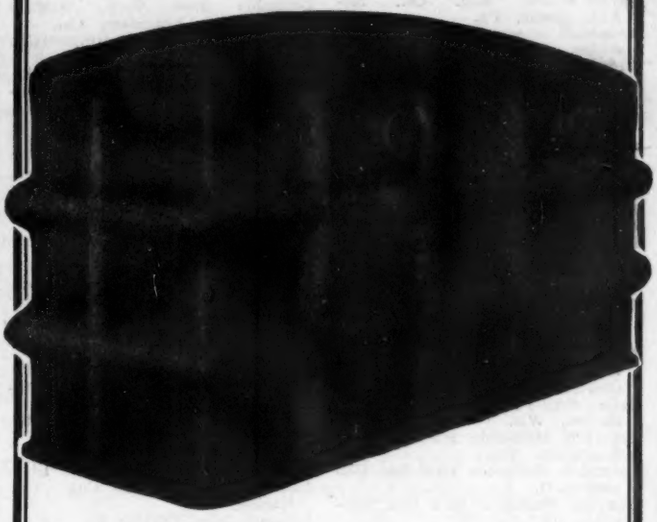
for ROLLING MILLS and STEEL WORKS

We manufacture CHILLED ROLLS—ROLL LATHES —IRON CASTINGS—SQUARING and DOUBLING SHEARS for Sheet and Tin Mills

HYDE PARK FOUNDRY & MACHINE CO.

HYDE PARK, PA.



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are the most economical equipment you can buy for the purpose. Their extra service recommends them as a production economy of considerable importance. It will pay you to install them in your plant now. Write to us for prices and other details.

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Akron, Ohio

CASTINGS (Gray Iron) Cont.
Quincy Stove Mfg. Co., The, Quincy, Ill.
Standard Engineering Co., Ellwood City, Pa.
Sutton-Abramsen Engineering Co., Park Bldg., Pittsburgh, Pa.
Taylor-Wilson Mfg. Co., McKees Rocks, Pa.
Treadwell Engineering Co., Easton, Pa.
United Engineering & Foundry Co., Farmers Bank Bldg., Pittsburgh, Pa.
Walworth Run Foundry Co., The, W. 27th & Nickel Plate R. R., Cleveland, O.
Wheeling Mold & Foundry Co., Wheeling, W. Va.

CASTINGS (Heat Resistant)
Electro-Alloys Co., The, Elyria, O.
Farrell-Cheek Steel Foundry Co., Sandusky, O.

CASTINGS (Malleable)
Acme Steel & Malleable Iron Works, Inc., 245 Military Rd., Buffalo, N. Y.
American Malleable Castings Association, Union Trust Bldg., Cleveland, O.
Belle City Malleable Iron Co., Racine, Wis.
Berryhill Malleable Iron Co., Evansville, Ind.
Columbus Malleable Iron Co., Columbus, O.
Danville Malleable Iron Co., Danville, Ill.
Dayton Malleable Iron Co., Dayton, O.
Decatur Malleable Iron Co., Decatur, Ill.
Frazer & Jones Co., Syracuse, N. Y.
Haven Malleable Castings Co., The, Knowlton St., Cincinnati, O.
Illinois Malleable Iron Co., 1801 Diversey Blvd., Chicago, Ill.
Iowa Malleable Iron Co., Fairfield, Iowa
Kalamazoo Malleable Iron Co., Kalamazoo, Mich.
Lakeside Malleable Castings Co., Racine, Wis.
Link-Belt Co., P. O. Box 346, Indianapolis, Ind.
Marion Malleable Iron Works, Marion, Ind.
Moline Malleable Iron Co., St. Charles, Ill.
Newark Malleable Iron Works, Newark, N. J.
Northern Malleable Iron Co., St. Paul, Minn.
Northwestern Malleable Iron Co., Milwaukee, Wis.
Ohio Brass Co., Mansfield, O.
Peoria Malleable Castings Co., Peoria, Ill.
Pittsburgh Malleable Iron Co., 34th & Smallman Sts., Pittsburgh, Pa.
Rockford Malleable Iron Works, Rockford, Ill.
Ross-Meehan Foundries, Chattanooga, Tenn.
Temple Malleable Iron & Steel Co., Harrison Bldg., Philadelphia, Pa.
Vermillion Malleable Iron Co., Hoopeston, Ill.
Wisconsin Malleable Iron Co., Milwaukee, Wis.
Zanesville Malleable Co., Zanesville, O.

CASTINGS (Monel Metal)
Pittsburgh Valve, Foundry & Construction Co., 26th & A. V. Ry., Pittsburgh, Pa.

CASTINGS (Nickel Chromium)
Chicago Steel Foundry Co., Kedzie Ave. at 37th St., Chicago, Ill.

CASTINGS (Semisteel)
Taylor-Wilson Mfg. Co., McKees Rocks, Pa.

CASTINGS (Steel)
Adamson Machine Co., The, Akron, Ohio.
Allegheny Steel Co., Brackenridge, Pa.
American Adamite Co., The, 12th & Etna Sts., Pittsburgh, Pa.
American Steel Foundries, 410 No. Michigan Ave., Chicago, Ill.
Atlas Steel Casting Co., 1963 Elmwood Ave., Buffalo, N. Y.
Bethlehem Steel Co., Bethlehem, Pa.
Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa.
Cann & Saul Steel Co., 516 Commerce St., Philadelphia, Pa.
Chicago Steel Foundry Co., Kedzie Ave. at 37th St., Chicago, Ill.
Columbia Steel Corp., Balfour Bldg., San Francisco, Cal.
Commercial Steel Castings Co., The, Marion, O.
Crucible Steel Castings Co., The, Almira and W. 84th St., Cleveland, O
Deemer Steel Casting Co., 9th and Washington Ave., New Castle, Del.
Era Steel Co., The, Bucyrus, Ohio.
Farrell-Cheek Steel Foundry Co., Sandusky, Ohio.
Federal Steel Foundry Co., Chester, Pa.
Industrial Steel Casting Co., Toledo, O.
Mackintosh-Hemphill Co., Pittsburgh, Pa.
Maynard Electric Steel Castings Co., 2-12 Kilbourn Rd., Milwaukee, Wis.
Mesta Machine Co., Homestead, Pa.
Midvale Co., The, Nicetown, Philadelphia, Pa.
National Roll & Foundry Co., The, Avonmore, Pa.
Nugent Steel Castings Co., 31 & Wood Sts., Chicago, Ill.
Racine Steel Castings Co., Racine, Wis.
Reliance Steel Casting Co., 28th and Smallman Sts., Pittsburgh, Pa.
Ross-Meehan Foundries, Chattanooga, Tenn.
Sharon Foundry Co., Sharon, Pa.
Sivyer Steel Casting Co., Milwaukee, Wis.
Smith, George H., Steel Casting Co., Milwaukee, Wis.
Stroh Steel Hardening Process Co., Westinghouse Bldg., Pittsburgh, Pa.
Strong Steel Foundry Co., 33 Norris St., Buffalo, N. Y.
Treadwell Engineering Co., Easton, Pa.
Union Steel Casting Co., 62nd and Butler Sts., Pittsburgh, Pa.
United Engineering & Foundry Co., Farmers Bank Bldg., Pittsburgh, Pa.
West Steel Casting Co., 805 E. 70th St., Cleveland, O.
Wheeling Mold & Foundry Co., Wheeling, W. Va.

CASTORS (Plate Mill)—See PLATE CASTORS

CEMENT (High-Temperature)
Harbison Walker Refractories Co., Farmers Bank Bldg., Pittsburgh, Pa.
Quigley Furnace Specialties Co., 26 Cortlandt St., New York City.

CEMENT (Silica and Chrome)
General Refractories Co., 117 S. 16th St., Philadelphia, Pa.

CEMENT MACHINERY
Allis-Chalmers Mfg. Co., Milwaukee, Wis.

CENTRAL STATION EQUIPMENT
General Electric Co., Schenectady, N. Y.
Westinghouse Electric & Mfg. Co., E. Pittsburgh, Pa.

CHAIN DRIVES
Link-Belt Co., 910 So. Michigan Ave., Chicago, Ill.

CHAINS (Crane & Hoist)
American Chain Co., Bridgeport, Conn.

CHAINS FOR ALL PURPOSES
American Chain Co., Bridgeport, Conn.

CHAINS (Power Transmission)
Link-Belt Co., 910 So. Michigan Ave., Chicago, Ill.

CHANNELS—See STEEL (Structural)

CHAPLETS
Erdle Perforating Co., 171 York St., Rochester, N. Y.

CHARCOAL
Hillman Coal & Coke Co., First National Bank Bldg., Pittsburgh, Pa.

CHARGING MACHINES (Cupola)
Roots, P. H. & F. M., Co., Connersville, Ind.
Shepard Electric Crane & Hoist Co., 358 Schuyler Ave., Montour Falls, N. Y.

CHEMICALS
American Chemical Paint Co., Ambler, Pa.
Ford, J. B., Co., The, Wyandotte, Mich.
Hearne, William W., Inc., Real Estate Trust Bldg., Philadelphia, Pa.

CHISEL BLANKS
Hunter Saw & Machine Co., 5656 Butler St., Pittsburgh, Pa.
Marchant, George F., Co., 1434 S. Rockwell St., Chicago, Ill.

CHROME PLATING
Chemical Treatment Co., 26 Broadway, New York City.

CHROME VANADIUM
Allen, Edgar, Steel Co., Inc., 718-722 W. Lake St., Chicago, Ill.

CHROMIUM METAL
Electro Metallurgical Sales Corp., 30 E. 42nd St., New York City.

CHUCKS (Lathe)
Whiton, D. E., Machine Co., New London, Conn.

CLEANERS (Metal)—See METAL CLEANERS

CLEANING COMPOUNDS (Automobile Body)
Industrial Chemical Products Corp., 3200 Woodbridge St., Detroit, Mich.

CLEANING SPECIALTIES
American Chemical Paint Co., Ambler, Pa.
Ford, J. B., Co., The, Wyandotte, Mich.

CLUTCHES
Johnson, Carlyle, Machine Co., The, Manchester, Conn.
Link-Belt Co., 910 So. Michigan Ave., Chicago, Ill.

CLUTCHES (Cut-Off Coupling)
Johnson, Carlyle, Machine Co., The, Manchester, Conn.

CLUTCHES (Friction)
Johnson, Carlyle, Machine Co., The, Manchester, Conn.
Jones, W. A., Foundry & Machine Co., 4437 W. Roosevelt Ave., Chicago, Ill.

COAL AND COKE
Cleveland-Cliffs Iron Co., Union Trust Bldg., Cleveland, O.
Eaton, Rhodes & Co., First National Bank Bldg., Cincinnati, O.
Hanna, The M. A., Co., Leader-News Bldg., Cleveland, O.
Hillman Coal & Coke Co., First National Bank Bldg., Pittsburgh, Pa.
Park & Williams, Real Estate Trust Bldg., Philadelphia, Pa.
Pickands, Mather & Co., Union Trust Bldg., Cleveland, O.
Pilling & Co., Inc., 1500 Chestnut St., Philadelphia, Pa
Pittsburgh Coal Co., Oliver Bldg., Pittsburgh, Pa.
Rogers, Brown & Crocker Bros., Inc., 21 E. 40th St., New York City.
Snyder, W. P., Co., Oliver Bldg., Pittsburgh, Pa.
St. Louis Coke & Iron Co., 208 S. LaSalle St, Chicago, Ill.
Tennessee Coal, Iron & Railroad Co., Brown-Marx Bldg., Birmingham, Ala.
Tutein, E. Arthur, Inc., 200 Devonshire St., Boston, Mass.

COAL CRUSHERS AND PULVERIZERS
Bartlett, C. O., & Snow Co., 6203 Harvard Ave., Cleveland, O.
Orton Crane & Shovel Co., 608 S. Dearborn St., Chicago, Ill.

COAL, ORE AND ASH HANDLING MACHINERY
Bartlett, C. O., & Snow Co., 6203 Harvard Ave., Cleveland, O.
Brown Hoisting Machinery Co., 4403 St. Clair Ave., Cleveland, O.
Link-Belt Co., 910 So. Michigan Ave., Chicago, Ill.
Orton Crane & Shovel Co., 608 So. Dearborn St., Chicago, Ill.
Webster Mfg. Co., 4500 Cortland St., Chicago, Ill.

COKE—See COAL AND COKE

COKE OVEN MACHINERY
Atlas Car & Mfg. Co., 1140 Ivanhoe Rd., Cleveland, O.
Pennsylvania Engineering Works, New Castle, Pa.
Wellman-Seaver-Morgan Co., The, 7025 Central Ave., Cleveland, O.

COKE OVENS (By-Product)
Koppers Co., The, Union Trust Bldg., Pittsburgh, Pa.

COLD STRIP MACHINERY
Blake & Johnson Co., The, 185 N. Elm St., Waterbury, Conn.

COMPRESSORS (Air)
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Chicago Pneumatic Tool Co., 6 E. 44th St., New York City.
General Electric Co., Schenectady, N. Y.
Ingersoll-Rand Co., 11 Broadway, New York City.
Spencer Turbine Co., Hartford, Conn.

COMPRESSORS (Portable)
Ingersoll-Rand Co., 11 Broadway, New York City.

CONCRETE ARMORING (Surface)
Irving Iron Works, Long Island City, N. Y.

CONCRETE INSERTS
Dayton Malleable Iron Co., Dayton, O.

CONCRETE MIXERS—See MIXERS (Concrete)

CONCRETE REINFORCING BARS—See BARS (Concrete Reinforcing)

CONDENSERS (Surface, Barometric, Multi-Jet)
Ingersoll-Rand Co., 11 Broadway, New York City.

CONDUITS (Electric)
Youngstown Sheet & Tube Co., Youngstown, O.

CONTRACTORS—See ENGINEERS AND CONTRACTORS

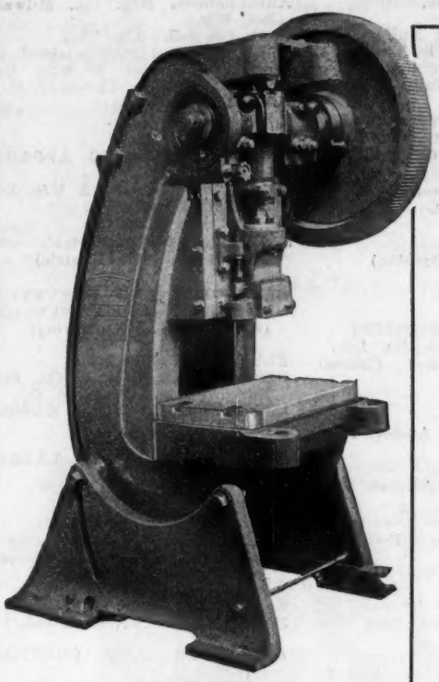
CONTROLLERS (Electric)
Clark Controller Co., The, 1146 E. 152nd St., Cleveland, O.
Cutler-Hammer Mfg. Co., The, Milwaukee, Wis.
Electric Controller & Mfg. Co., 2700 E. 79th St., Cleveland, O.

CONVEYORS (Belt)
Webster Mfg. Co., The, 4500 Cortland St., Chicago, Ill.

CONVEYORS (Elevating and Conveying)
Bartlett, C. O., & Snow Co., 6203 Harvard Ave., Cleveland, O.
Brown Hoisting Machinery Co., 4403 St. Clair Ave., Cleveland, O.
Link-Belt Co., 910 So. Michigan Ave., Chicago, Ill.

CONVEYORS (Portable)
Mackintosh Engineering Co., Schofield Bldg., Cleveland, O.

See Index to Advertisements for Pages Containing Advertisements of Companies Listed Above



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PHILADELPHIA
321 Bulletin Bldg.
PITTSBURGH
511 Farmers' Bank Bldg.

CLEVELAND PRESSES

From POWDER CANS To AUTOMOBILES

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From the Smallest Open Back Inclinable to the largest Single and Double Crank

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Main Office & Works CLEVELAND, OHIO
PITTSBURGH - CHICAGO - PHILADELPHIA - NEW YORK

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Bradley Hammers combine strength, power, speed and economy. They are easy to operate and control. *Bradley Hammers* are made in 4 styles and 32 sizes—a style and size to solve every forging problem.

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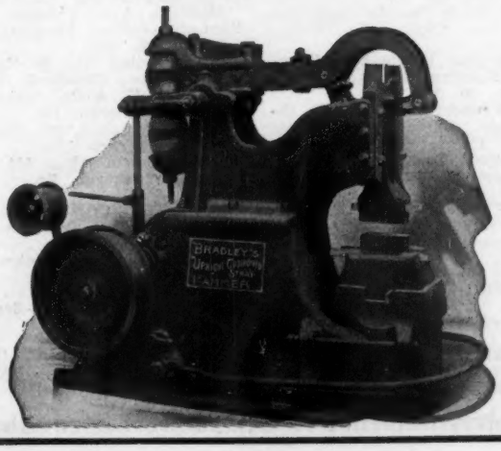
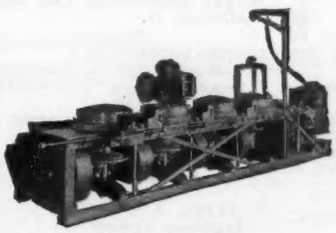
C. C. BRADLEY & SON, Inc.
432 N. Franklin St. SYRACUSE, N. Y.



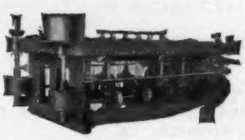
HIGH-PRODUCTION CONTINUOUS WIRE DRAWING MACHINERY



Rod Frame,
No. 5 to No. 14 Wire

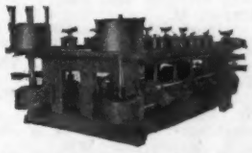
Speeds of blocks varied instantly and automatically. Water-cooled.

(No differential gearing of any kind).



Double 8-Draft Wet
No. 22—No. 36 Wire

Production with average operator No. 22-33 wire 6 blocks—660 lbs. in 10 hours.



Double 5-Draft Wet
No. 14—No. 23 Wire

Production with average operator No. 14-20 wire 3 blocks—3300 lbs. in 10 hours.

Sleeper & Hartley

Worcester, Mass.

COOLERS (Copper)
Lawrenceville Bronze Co., 518 Bessemer Bldg., Pittsburgh, Pa.

COOLING BEDS
Morgan Construction Co., Worcester, Mass.

COPPER
Copper & Brass Research Ass'n, 25 Broadway, New York City.

COPPER AND BRASS DRAWING MACHINERY
Vaughn Machinery Co., The, Cuyahoga Falls, O.

CORE MAKING MACHINES
American Foundry Equipment Co., 407 Byrkit Ave., Mishawaka, Ind.

CORE OVENS
Holcroft & Co., 6545 Epworth Blvd., Detroit, Mich.

CORRUGATING AND CRIMPING MACHINES (Cold Rolled)
Streine Tool & Mfg. Co., The, New Bremen, Ohio.

COTTER PINS
Hindley Mfg. Co., John St., Valley Falls, R. I.

COUNTING MACHINES
Veeder Mfg. Co., Hartford, Conn.

COUPLINGS (Carriage)
Bradley, C. C., & Son, Inc., 432 N. Franklin St., Syracuse, N. Y.

COUPLINGS (Flexible)
Clark Controller Co., The, 1146 E. 152nd St., Cleveland, O.
Electric Controller & Mfg. Co., 2700 E. 79th St., Cleveland, O.
Farrel Foundry & Machine Co., Buffalo, N. Y.
James, D. O., Mfg. Co., 1120 W. Monroe St., Chicago, Ill

CRANES
Bedford Foundry & Machine Co., Bedford, Ind.
Cyclops Iron Works, 837 Folsom St., San Francisco, Cal.
Payne, N. B., & Co., 25 Church St., New York City.
Whiting Corp., Harvey, Ill.

CRANES (Charging)
Alliance Machine Co., The, Alliance, O.
Morgan Engineering Co., The, Alliance, O.
Wellman-Seaver-Morgan Co., The, 7025 Central Ave., Cleveland, O.

CRANES (Crawling, Tractor, Erection)
Brown Hoisting Machinery Co., 4403 St. Clair Ave., Cleveland, O.
Harnischfeger Corp., 38th & National, Milwaukee, Wis.
Link-Belt Co., 910 So. Michigan Ave., Chicago, Ill.
McMyler-Interstate Co., Bedford, O.
Marion Steam Shovel Co., The, Marion, Ohio.
Orton Crane & Shovel Co., 608 S. Dearborn St., Chicago. Ill.

CRANES (Electric, Industrial, Truck Mounted)
Baker-Raulang Co., The, 2180 W. 25th St., Cleveland, O.

CRANES (Electric Traveling)
Alliance Machine Co., The, Alliance, O.
Box, Alfred, Co., Janney & E. Ontario Sts., Philadelphia, Pa.
Cleveland Crane & Engr. Co., The, Wickliffe, O.
Erie Steel Construction Co., The, Erie, Pa.
Harnischfeger Corp., 38th & National, Milwaukee, Wis.
Milwaukee Elec. Crane & Mfg. Corp., Milwaukee, Wis.
Morgan Engineering Co., The, Alliance, O.
Niles-Bement-Pond Co., 111 Broadway, New York City.
Roeper Crane & Hoist Works, 1729 No. 10th St., Reading, Pa.
Shepard Electric Crane & Hoist Co., 358 Schuyler Ave., Montour Falls, N. Y.
Whiting Corporation, Harvey, Ill.

CRANES (Gantry)
Bedford Foundry & Machine Co., Bedford, Ind.
Whiting Corporation, Harvey, Ill.

CRANES (Hand)
Cleveland Electric Tramrail, Division of the Cleveland Crane & Engineering Co., Wickliffe, O.
Reading Chain & Block Corp., Reading, Pa.
Baker-Raulang Co., The, 1729 No. 10th St., Reading, Pa.
Whiting Corporation, Harvey, Ill.

CRANES (Hydraulic)
Alliance Machine Co., The, Alliance, O.

CRANES (Industrial)
Cleveland Crane & Engr. Co., The, Wickliffe, O.

CRANES (Jib)
Niles-Bement-Pond Co., 111 Broadway, New York City.

CRANES (Locomotive)
Brown Hoisting Machinery Co., 4403 St. Clair Ave., Cleveland, O.
Browning Crane Co., E. 162nd and Waterloo Rd., Cleveland, O.
Harnischfeger Corp., 38th and National, Milwaukee, Wis.
Link-Belt Co., 910 So. Michigan Ave., Chicago, Ill.
McMyler Interstate Co., Bedford, O.
Marion Steam Shovel Co., The, Marion, O.
Orton Crane & Shovel Co., 608 S. Dearborn St., Chicago, Ill.

CRANES (Motor Truck)
Browning Crane Co., 162nd and Waterloo Rd., Cleveland, O.

CRANES (Portable)
Beatty Machine & Mfg. Co., Hammond, Ind.

CRANES (Wall)
Milwaukee Electric Crane & Mfg. Corp., Milwaukee, Wis.
Niles-Bement-Pond Co., 111 Broadway, New York City.

CRANK SHAFTS
Champion Machine & Forging Co., The, 3675 E. 78th St., Cleveland, O.

CRUSHING, GRINDING AND PULVERIZING MACHINERY
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Morgan Engineering Co., The, Alliance, O.

CUPRO-VANADIUM
Vanadium Corp. of America, 120 Broadway, New York City.

CUTTING AND WELDING APPARATUS—See WELDING AND CUTTING APPARATUS (Electric)

CUTTING AND WELDING (Oxy-Acetylene Process)—See WELDING AND CUTTING APPARATUS AND SUPPLIES (Oxy-Acetylene Process)

CYLINDERS (Acetylene) — See ACETYLENE IN CYLINDERS

CYLINDERS (Oxygen) — See OXYGEN IN CYLINDERS

CYLINDERS (Pressure)
National Tube Co., Frick Bldg., Pittsburgh, Pa.

DECARBONIZING APPARATUS
Oxweld Acetylene Co., 30 E. 42nd St., New York City.

DEOXIDIZERS
Titanium Alloy Mfg. Co., The, Niagara Falls, N. Y.

DERRICKS
American Terry Derrick Co., So. Kearney, N. J.

DIE BLOCKS
Bethlehem Steel Co., Bethlehem, Pa.
Heppenstall Forge & Knife Co., Arsenal Station, Pittsburgh, Pa.
Strong Steel Foundry Co., 33 Norris St., Buffalo, N. Y.

DIE CUSHIONS (Pneumatic)
Marquette Tool & Mfg. Co., The, 319 W. Ohio St., Chicago, Ill.

DIE HEADS (Automatic)
Landis Machine Co., Waynesboro, Pa.

DIE HEADS (Self Opening)
Rickert-Shafer Co., Box 722, Erie, Pa.

DIE MAKERS ACCESSORIES
Danly Machine Specialties, Inc., 4915 N. Lincoln Ave., Chicago, Ill.

DIE SETS
U. S. Tool Co., Inc., Ampere N. J.

DIE SHOES
U. S. Tool Co., Inc., Ampere, N. J.

DIES
Bethlehem Steel Co., Bethlehem, Pa.
Toledo Machine & Tool Co., Toledo, O.
Vanadium Corp. of America, 120 Broadway, New York City.

DIES (Riveters)
Marchant, George F., Co., 1434 So. Rockwell St., Chicago, Ill.

DOORS AND SHUTTERS (Steel, Fire and Rolling)
Kinnear Mfg. Co., 818-868 Field Ave., Columbus, O.
Moeschl-Edwards Const. Co., The, 120 W. 9th St., Covington, Ky.

DRAFTING ROOM EQUIPMENT
Pease, The C. F., Co., 853 N. Franklin St., Chicago, Ill.

DRAW BENCHES
Standard Engineering Co., Ellwood City, Pa.
Vaughn Machinery Co., The, Cuyahoga Falls, O.

DRAWING INSTRUMENTS AND DRAWING MATERIALS
Pease, The C. F., Co., 853 N. Franklin St., Chicago, Ill.

DRILLING MACHINES (Automatic)
Barnes Drill Co., Rockford, Ill.

DRILLING MACHINES (Vertical and Gang)
Barnes Drill Co., Rockford, Ill.
Rockford Machine Tool Co., 2400 Kishwaukee Ave., Rockford, Ill.

DRILLS (Pneumatic)
Cleveland Pneumatic Tool Co., 3734 E. 78th St., Cleveland, O.
Ingersoll-Rand Co., 11 Broadway, New York City.

DRILLS (Rock)
Chicago Pneumatic Tool Co., 6 E. 44th St., New York City.
Ingersoll-Rand Co., 11 Broadway, New York City.

DRIVES (Cut Herringbone Gears)
Farrel Foundry & Machine Co., Buffalo, N. Y.
Lewis Foundry & Machine Co., Farmers Bank Bldg., Pittsburgh, Pa.
Strong Steel Foundry Co., 33 Norris St., Buffalo, N. Y.

DRIVES (Gear, Rope)
Mesta Machine Co., Homestead, Pa.

DRYERS (Sand, Coal, Ores, Chemical, Etc.)
Bartlett, C. O., & Snow Co., 6203 Harvard Ave., Cleveland, O.

DUST ARRESTERS
Pangborn Corp., P. O. Box 858, Hagerstown, Md.

ELECTRICAL EQUIPMENT
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Clark Controller Co., The, 1146 E. 152nd St., Cleveland, O.
Electric Controller & Mfg. Co., 2700 E. 79th St., Cleveland, O.
General Electric Co., Schenectady, N. Y.

ELECTRIC HEATING APPARATUS
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

ELECTRIC TOOLS (Portable)—See TOOLS (Portable Electric)

ELEVATING AND CONVEYING MACHINERY—See CONVEYORS (Elevating and Conveying)

ELEVATORS (Bucket)
Bartlett, C. O., & Snow Co., 6203 Harvard Ave., Cleveland, O.
Link-Belt Co., 910 So. Michigan Ave., Chicago, Ill.

ENGINE LATHES—See LATHES (Engine)

ENGINES (Gas, Oil)
Chicago Pneumatic Tool Co., 6 E. 44th St., New York City.
Ingersoll-Rand Co., 11 Broadway, New York City.

ENGINES (Heavy Duty)
Mesta Machine Co., Homestead, Pa.

ENGINEERS AND CONTRACTORS
Brassert, H. A., & Co., 310 So. Michigan Ave., Chicago, Ill.
Chapman Engineering Co., Mt. Vernon, O.
Costello Engineering Co., 519 Oliver Bldg., Pittsburgh, Pa.
Freyn Engineering Co., 310 So. Michigan Ave., Chicago, Ill.
Industrial Maintenance Bureau, 331 Fourth Ave., Pittsburgh, Pa.
Kennedy, Julian, Bessemer Bldg., Pittsburgh, Pa.
Laughlin, Alex, & Co., First National Bank Bldg., Pittsburgh, Pa.
Mackintosh-Hemphill Co., Pittsburgh, Pa.
McKee, Arthur G., & Co., 2422 Euclid Ave., Cleveland, O.
Moore, W. E., & Co., Union Bank Bldg, Pittsburgh, Pa.
Pennsylvania Engineering Works, New Castle, Pa.
Phoenix Bridge Co., 20 South 15th St., Philadelphia, Pa.
Pittsburgh Valve, Fdry. & Construction Co., 26th & A. V. Ry., Pittsburgh, Pa.
Smythe, S. R., Co, The, House Bldg, Pittsburgh, Pa.
Sutton-Abramsen Engineering Co., Park Bldg., Pittsburgh, Pa.
Swindell, Wm., & Bros., P. O. Box 1753, Pittsburgh, Pa

ENGINEERS (Consulting)
American Heat Economy Bureau, 926 Wabash Bldg., Pittsburgh, Pa.
Brassert, H. A., & Co., 310 So. Michigan Ave., Chicago, Ill.
Ellis, Frank I., 2127 Farmers Bank Bldg., Pittsburgh, Pa.
Freyn Engineering Co., 310 So. Michigan Ave., Chicago, Ill.
Kennedy, Julian, Bessemer Bldg., Pittsburgh, Pa.
McKee, Arthur G., & Co., 2422 Euclid Ave., Cleveland, O.
Moore, W. E., & Co., Union Bank Bldg, Pittsburgh, Pa.
Perin & Marshall, 40 West 40th St., New York City.
Shover, Barton R., 424 Oliver Bldg., Pittsburgh, Pa.

ENGINEERS, CONSULTING (By-Product Coke Oven and Gas Plants)
Koppers Co., The, Union Trust Bldg., Pittsburgh, Pa.

EXHAUSTERS (Gas)—See GAS EXHAUSTERS

FACTORY EQUIPMENT (Steel)—See STOOLS AND FACTORY EQUIPMENT (Steel)

See Index to Advertisements for Pages Containing Advertisements of Companies Listed Above

450 Rods Per Hour, Each 14 Feet Long

¼" *Diameter Wire*

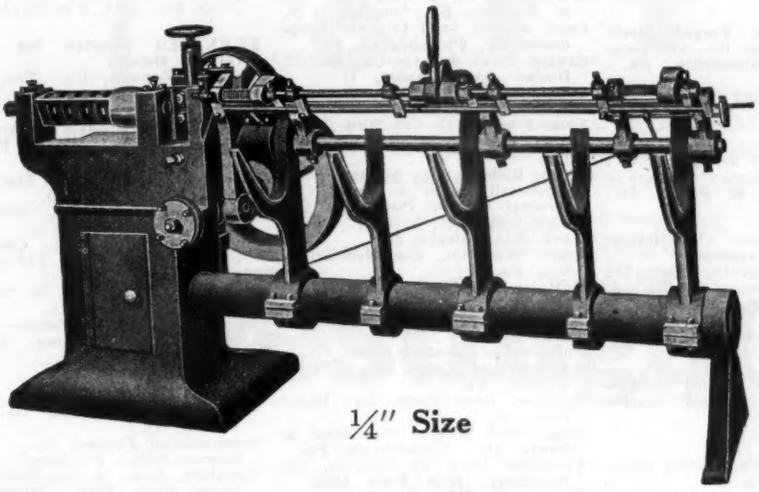
from each of three machines, is the report of one user of Shuster Automatic Wire Straightening and Cutting Machines, AND ONE OPERATOR TAKES CARE OF ALL THREE.

The wire is perfectly straight, and each length is a duplicate of the preceding one.

To maintain this is easy for Shuster Machines, because they are built for SERVICE.

Tell us what diameters and lengths you use, and we will show you how quickly you can cut it.

Catalogue T?



¼" Size

The F. B. Shuster Company

formerly John Adt & Son

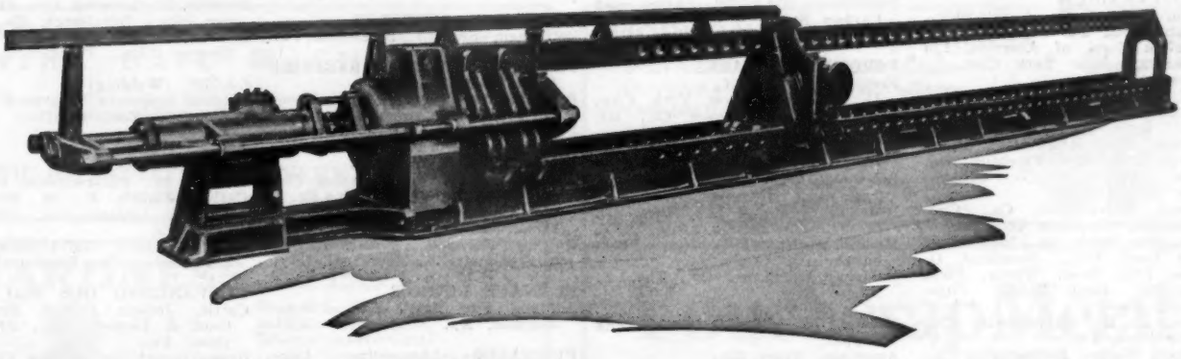
New Haven, Conn.

Established 1866

Straightener Specialists

Taylor-Wilson 2" x 6" Hydraulic Pipe Testing Bench

Motor Driven Carriage



We design and build machines of the better class, for the manufacture of wrought iron or steel pipe. Accuracy, easy operation and long service are their cardinal features. Ask the users.

We shall be glad to figure on your requirements.

TAYLOR-WILSON MFG. CO

ENGINEERS–FOUNDERS–MACHINISTS

MAIN OFFICE AND WORKS (PITTSBURGH DISTRICT) McKEES ROCKS, PA., U. S. A.

FACTORY SPECIALISTS
Houston, David, Bond & Co., Inc., Military Park Bldg., 60 Park Place, Newark, N. J.
Technical Service Co., 233 Broadway, New York City.

FENCES—See WIRE FENCES

FERROALLOYS
Cleveland-Cliffs Iron Co., Union Trust Bldg., Cleveland, O.
Electro Metallurgical Sales Corp., 30 E. 42nd St., New York City.
Keokuk Electro-Metals Co., Keokuk, Iowa.
Lavino, E. J., & Co., Bullitt Bldg., Philadelphia, Pa.
Leavitt, C. W., & Co, 30 Church St, New York City.
Metal & Thermit Corp., 120 Broadway, New York City.

FERROCARBON TITANIUM
Titanium Alloy Mfg. Co., Niagara Falls, N. Y.

FERROCHROME
Electro Metallurgical Sales Corp., 30 E. 42nd St., New York City.
Lavino, E. J., & Co., Bullitt Bldg., Philadelphia, Pa.
Samuel, Frank, & Co., Harrison Bldg., Philadelphia, Pa.

FERROMANGANESE
Browne, deCourcy, Inc. 8 West 40th St., New York City.
Electro Metallurgical Sales Corp., 30 E. 42nd St., New York City.
Lavino, E. J., & Co., Bullitt Bldg., Philadelphia, Pa.
Leavitt, C. W., & Co., 30 Church St., New York City.
Rogers, Brown & Crocker Bros., Inc., 21 E. 40th St., New York City.
Samuel, Frank, & Co., Harrison Bldg., Philadelphia, Pa.
Tutein, E. Arthur, Inc., 200 Devonshire St., Boston, Mass.

FERROPHOSPHORUS
Rogers, Brown & Crocker Bros., Inc., 21 E. 40th St., New York City.

FERROSILICON
Electro Metallurgical Sales Corp., 30 E. 42nd St., New York City.
Globe Iron Co., Jackson, O.
Keokuk Electro-Metals Co., Keokuk, Iowa.
Lavino, E. J., & Co., Bullitt Bldg., Philadelphia, Pa.
Rogers, Brown & Crocker Bros., Inc., 21 E. 40th St., New York City.
Samuel, Frank, & Co., Harrison Bldg., Philadelphia, Pa.

FERROVANADIUM
Lavino, E. J., & Co., Bullitt Bldg., Philadelphia, Pa.
Vanadium Corp. of America, 120 Broadway, New York City.

FIRE BRICK AND CLAY
Ashland Fire Brick Co., Ashland, Ky.
Brighton Fire Brick Co., Block House Run, New Brighton, Pa.
Climax Fire Brick Co., Climax, Pa.
Crescent Refractories Co., Curwensville, Clearfield Co., Pa.
Dover Fire Brick Co., 1012 Nat'l City Bank Bldg., Cleveland, O.
Eureka Fire Brick Works, First National Bank Bldg., Pittsburgh, Pa.
France, J. H., Refractories Co., Snow Shoe, Pa.
Harbison Walker Refractories Co., Farmers Bank Bldg., Pittsburgh, Pa.
Haws Refractories Co., Johnstown, Pa.
Hydraulic Press Brick Co., Central National Bank Bldg., St. Louis, Mo.
Kier Fire Brick Co., Oliver Bldg., Pittsburgh, Pa.
Laclede Christy Clay Products Co., St. Louis, Mo.
Portsmouth Refractories Co., Portsmouth, O.
Queen's Run Refractories Co., Inc., Lock Haven, Pa.
Stowe-Fuller Refractories Co., The, 1650 Union Trust Bldg., Cleveland, O.
Superior Basic Brick Co., 517 Bessemer Bldg., Pittsburgh, Pa.
Union Mining Co., 1113 Fidelity Bldg., Baltimore, Md.
U. S. Refractories Corp., Mt. Union, Pa.
Walsh Fire Clay Products Co., 4070 N. Main St., St. Louis, Mo.

FIRE CLAY (Ground)
General Refractories Co., 117 S. 16th St., Philadelphia, Pa.
U. S. Refractories Corp., Mt. Union, Pa.

FIRE DOORS AND SHUTTERS
Kinnear Mfg. Co., The, 818-868 Field Ave., Columbus, O.
Moeschl-Edwards Const. Co., The, 120 W. 9th St., Covington, Ky.

FLANGES (Pipe)
Dart, E. M., Mfg. Co., Providence, R. I.

FLANGES (Pipe, Forged Steel)
Cann & Saul Steel Co., 516 Commerce St., Philadelphia, Pa.

FLASKS (Foundry)
Truscon Steel Co., Youngstown, O.

FLASKS (Snap)
American Foundry Equipment Co., 407 Byrkit Ave., Mishawaka, Ind.
Diamond Clamp & Flask Co., Richmond, Ind.

FLOORING (Steel, Ventilating, Nonslipping, Fireproof)
Kerlow Steel Flooring Co., 232 Culver Ave., Jersey City, N. J.
Hendrick Mfg. Co., 43 Dundaff St., Carbondale, Pa.
Irving Iron Works, Long Island City, N. Y.

FLOOR PLATES (Rolled Steel)—See PLATES (Rolled Steel—Floor)

FLUORSPAR
Lavino, E. J. & Co., Bullitt Bldg., Philadelphia, Pa.
Rogers, Brown & Crocker Bros., Inc., 21 E. 40th St., New York City.

FLUX (Welding)
Oxweld Acetylene Co., 30 E. 42nd St., New York City.

FORGES
Bradley, C. C., & Son, Inc., 432 N. Franklin St., Syracuse, N. Y.

FORGING BILLETS
Andrews Steel Co., Newport, Ky.
Central Steel Co., Massillon, O.
Wood, Alan, Iron & Steel Co., Widener Bldg., Philadelphia, Pa.

FORGING BILLETS (Alloy and Carbon Steel)
Central Steel Co., Massillon, O.

FORGING FURNACES
Best, W. N., Corp., 11 Broadway, New York City.
Chapman-Stein Furnace Co., Mt. Vernon, Ohio.

FORGING MACHINERY
Bliss, E. W., Co., 53rd St. and 2nd Ave., Brooklyn, N. Y.
Bradley, C. C., & Son, Inc., 432 N. Franklin St., Syracuse, N. Y.
Mackintosh-Hemphill Co., Pittsburgh, Pa.
National Machinery Co., The, Tiffin, O.

FORGINGS (Brass, Bronze and Copper)
American Brass Co., 25 Broadway, New York City.
Chicago Forging & Mfg. Co., 2004 Southport Ave., Chicago, Ill.

FORGING (Drop)
Bay City Forge Co., Erie, Pa.
Bethlehem Steel Co., Bethlehem, Pa.
Canton Forge & Axle Co., 2003-35 Deuber Ave., Canton, O.
Champion Machine & Forging Co., 3675 E. 78th St., Cleveland, O.
Columbus Forge & Iron Co., Columbus, O.
Drop Forging Co. of New York, 324 West Side Ave., Jersey City, N. J.
Eccles, Richard Co., Auburn, N. Y.
Heppenstall Forge & Knife Co., Arsenal Station, Pittsburgh, Pa.
Kropp Forge Co., 5301 W. Roosevelt Rd., Chicago, Ill.
Oliver Iron & Steel Corp., So. 10th & Muriel Sts., Pittsburgh, Pa.
Philadelphia Steel & Iron Co., Commercial Trust Bldg., Philadelphia, Pa.
Queen City Forging Co., The, 235 Tennyson St., Cincinnati, O.
Rockford Drop Forge Co., Rockford, Ill.
Scranton Forging Co., Scranton, Pa.
Strieby & Foote Co., 301 Ogden St., Newark, N. J.
Wilcox, D., Mfg. Co., Mechanicsburg, Pa.

FORGINGS (Iron and Steel)
Bay City Forge Co., Erie, Pa.
Bethlehem Steel Co., Bethlehem, Pa.
Bradley, C. C., & Son, Inc., 432 N. Franklin St., Syracuse, N. Y.
Cann & Saul Steel Co., 516 Commerce St., Philadelphia, Pa.
Canton Forge & Axle Co., 2003-35 Deuber Ave., Canton, O.
Columbus Forge & Iron Co., Columbus, O.
Drop Forging Co. of New York, 324 West Side Ave., Jersey City, N. J.
Eccles, Richard, Co., Auburn, N. Y.
Heppenstall Forge & Knife Co., Arsenal Station, Pittsburgh, Pa.
Kropp Forge Co., 5301 W. Roosevelt Rd., Chicago, Ill.
Leard, Wm., Co., The, New Brighton, Pa.
McMyler-Interstate Co., Bedford, O.
Mesta Machine Co., Homestead, Pa.
Midvale Co., The, Nicetown, Philadelphia, Pa.
Philadelphia Steel & Iron Co., Commercial Trust Bldg., Philadelphia, Pa.
Rockford Drop Forge Co., Rockford, Ill.
Tioga Steel & Iron Co., 52nd & Grays Ave., Philadelphia, Pa.
Vanadium Corp. of America, 120 Broadway, New York City.
Wilcox, D., Mfg. Co., Mechanicsburg, Pa.

FOUNDRY EQUIPMENT AND SUPPLIES
American Foundry Equipment Co., 407 Byrkit Ave., Mishawaka, Ind.
Beardsley & Piper Co., 2541 N. Keeler Ave., Chicago, Ill.
National Engineering Co., 549 W. Washington Blvd., Chicago, Ill.
Whiting Corp., Harvey, Ill.

FRAMES (Wire Drawing)
Morgan Construction Co., Worcester, Mass.
Vaughn Machinery Co., The, Cuyahoga Falls, O.

FROGS AND SWITCHES
Bethlehem Steel Co., Bethlehem, Pa.

FUEL OIL BURNING SYSTEMS AND PLANTS
Best, W. N. Corp., 11 Broadway, New York City.
Fuller-Lehigh Co., Fullerton, Pa.

FURNACE INSULATION
Armstrong Cork & Insulation Co., 101 24th St., Pittsburgh, Pa.
Celite Products Co., 11 Broadway, New York City.
Quigley Furnace Specialties Co., 26 Cortlandt St., New York City.

FURNACE LININGS
Ashland Fire Brick Co., Ashland, Ky.

FURNACES (Annealing, Case Hardening and Heat Treating)
Best, W. N., Corp., 11 Broadway, New York City.
Chapman-Stein Furnace Co., Mt. Vernon, O.
Combustion Engineering Corp., 43 Broad St., New York City.
Costello Engineering Co., 519 Oliver Bldg., Pittsburgh, Pa.
Electric Furnace Co., The, 538 Wilson St., Salem, O.
Hagan, George J., Co., Chamber of Commerce Bldg., Pittsburgh, Pa.
Holcroft & Co., 6645 Epworth Blvd., Detroit, Mich.
International Furnace Co., Keenan Bldg., Pittsburgh, Pa.
Strong, Carlisle & Hammond Co., The, 326 Frankfort Ave., Cleveland, O.

FURNACES (Blast)
Brassert, H. A., & Co., 310 So. Michigan Ave., Chicago, Ill.
McKee, Arthur G., & Co., 2422 Euclid Ave., Cleveland, O.
Mt. Vernon Bridge Co., Mt. Vernon, O.
Pennsylvania Engineering Works, New Castle, Pa.
Riter-Conley Co., Oliver Bldg., Pittsburgh, Pa.

FURNACES (Electric)
Hagan, George J., Co., Chamber of Commerce Bldg., Pittsburgh, Pa.
Strong, Carlisle & Hammond Co., The, 326 Frankfort Ave., Cleveland, O.
Swindell, Wm., & Brothers Co., P. O. Box 1753, Pittsburgh, Pa.

FURNACES (Electric for Nonferrous Metals)
Electric Furnace Co., The, 538 Wilson St., Salem, O.

FURNACES (Electric Melting)
American Bridge Co., 71 Broadway, New York City.
Electric Furnace Co., The, 538 Wilson St., Salem, O.
General Electric Co., Schenectady, N. Y.
Hagan, George J., Co., Chamber of Commerce Bldg., Pittsburgh, Pa.
Payne, N. B., & Co., 25 Church St., New York City.
Pittsburgh Electric Furnace Co., 32nd St. and Putney Way, Pittsburgh, Pa.

FURNACES (Open-Hearth)
Chapman-Stein Furnace Co., Mt. Vernon, O.
International Furnace Co., Keenan Bldg., Pittsburgh, Pa.
Laughlin, Alex., & Co., First National Bank Bldg., Pittsburgh, Pa.
Pennsylvania Engineering Works, New Castle, Pa.
Smythe, S. R., Co., Oliver Bldg., Pittsburgh, Pa.
Wellman-Seaver-Morgan Co., The, 7025 Central Ave., Cleveland, O.

FURNACES (Recuperative)
Combustion Engineering Corp., 43 Broad St., New York City.
Electric Furnace Co., The, 538 Wilson St., Salem, O.
International Furnace Co., Keenan Bldg., Pittsburgh, Pa.

FURNACES (Sheet and Tin Mill)
Costello Engineering Co., 519 Oliver Bldg., Pittsburgh, Pa.
International Furnace Co., Keenan Bldg., Pittsburgh, Pa.

GAGES (Welding)
Oxweld Acetylene Co., 30 E. 42nd St., New York City.

GALVANIZING
Cattie Brothers Corp., Tioga St., Philadelphia, Pa.
Cattie, Joseph P., & Brothers, Gaul & Letterly Sts., Philadelphia, Pa.
Hanlon-Gregory Galvanizing Co., 5515 Butler St., Pittsburgh, Pa.

GALVANIZING (Hot Dip)
Cattie, Joseph P., & Brothers, Gaul & Letterly Sts., Philadelphia, Pa.
Gray-Gregory Galvanizing Co., 220 Larkin St., Buffalo, N. Y.
Hanlon-Gregory Galvanizing Co., 5515 Butler St., Pittsburgh, Pa.

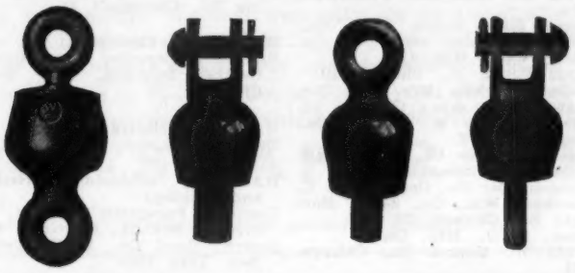
GALVANIZING PLANTS (For Sheets)
Erie Foundry Co., Erie, Pa.
United Engineering & Foundry Co., Farmers Bank Bldg., Pittsburgh, Pa.

GAGGERS
Franklin Core Rod & Gagger Co., Franklin, Pa.

GANG SLITTERS
Ams, Max, Machine Co., The, 101 Park Ave., New York City.

See Index to Advertisements for Pages Containing Advertisements of Companies Listed Above

A Trouble-Proof Strain Insulator



Duro Molded Strain Insulators possess great mechanical and dielectric strength. They are unaffected by heat and will not shrink with age or from exposure to the weather. They can be furnished in many designs suitable for industrial applications.

Westinghouse Electric & Manufacturing Co.
East Pittsburgh Pennsylvania
Sales Offices in All Principal Cities of the United States and Foreign Countries

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THE LONG AND ALLSTATTER CO.

AMERICAN PUNCH & SHEAR WORKS — THE QUALITY LINE

POWER PUNCHING & SHEARING MACHINERY

HAMILTON, OHIO, U.S.A.

BOLT, NUT, FORGING and WIRE NAIL MACHINERY

"National" Wedge Grip Bolt and Rivet Headers, National Bolt Cutter, National Heavy-Pattern Forging Machines, etc.

We solicit your inquiries

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TIFFIN, OHIO, U. S. A.

MORTON'S Keyway Cutters

Write for Bulletin No. 1-H. It contains description and illustrations which will convince you that we have kept our machines in the lead as to accuracy, efficiency, design and *results*.

Morton Manufacturing Co.
Muskegon Heights, Mich.

*

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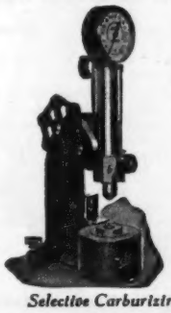

Should be done with reliable equipment. Do not experiment.

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(International Standard)

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Selective Carburizing. Localized Hardening by SHORE Process

The Shore Instrument & Mfg. Co.
Van Wyck Ave. and Carll St. JAMAICA, N. Y.
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Worth Most in Dense Bundles

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Write for Particulars

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3126 Burleigh Street Milwaukee, Wisconsin

*

GAS (Welding and Cutting)
Prest-O-Lite Co., Inc., The, 30 E. 42nd St., New York City.

GAS BOOSTERS (Rotary Positive Pressure)
Connersville Blower Co., The, Connersville, Ind.
Roots, P. H. & F. M., Co., Connersville, Ind.

GAS EXHAUSTERS
Connersville Blower Co., The, Connersville, Ind.
Roots, P. H., & F. M., Co., Connersville, Ind.

GAS HOLDERS
Pennsylvania Engineering Works, New Castle, Pa.

GAS METERS — See METERS (Gas, Air)

GAS PRODUCER PLANTS
Chapman Engineering Co., Mt. Vernon, O.
Cooper, C. & G., Co., Mt. Vernon, O.
Duff Patents Co., Inc., 321 Union Trust Bldg., Pittsburgh, Pa.
Flinn & Dreffein Co., 435 S. Dearborn St., Chicago, Ill.
Koppers Co., The, Union Trust Bldg., Pittsburgh, Pa.
Morgan Construction Co., Worcester, Mass.
U. S. Cast Iron Pipe & Foundry Co., Burlington, N. J.
Wellman-Seaver-Morgan Co., The, 7025 Central Ave., Cleveland, O.
Wood, R. D., & Co., 400 Chestnut Ave., Philadelphia, Pa.

GAS RECOVERY COKE OVEN AND GAS PLANTS
Koppers Co., The, Union Trust Bldg., Pittsburgh, Pa.

GEAR BLANKS
Bethlehem Steel Co., Bethlehem, Pa.
Strong Steel Foundry Co., 33 Norris St., Buffalo, N. Y.

GEAR GENERATORS
Farrel Foundry & Machine Co., Buffalo, N. Y.

GEARS
Boston Gear Works Sales Co., Norfolk Downs, Mass.

GEARS (Bakelite)
Albaugh Dover Mfg. Co., 2154 Marshall Blvd., Chicago, Ill.
Chicago Rawhide Mfg. Co., The, 1305 Elston Ave., Chicago, Ill.
Ganschow, Wm., Co., 24 N. Morgan St., Chicago, Ill.

GEARS (Bevel-Generated Tooth)
Albaugh-Dover Mfg. Co., 2154 Marshall Blvd., Chicago, Ill.
Ganschow, Wm., Co., 24 N. Morgan St., Chicago, Ill.

GEARS (Herringbone)
Farrel Foundry & Machine Co., Buffalo, N. Y.
Fawcus Machine Co., 2818 Smallman St., Pittsburgh, Pa.

GEARS (Machine Molded)
Jones, W. A., Foundry & Machine Co., 4437 W. Roosevelt Ave., Chicago, Ill.
Taylor-Wilson Manufacturing Co., McKees Rocks, Pa.

GEARS (Miter, Ring, Spiral, Worm)
Albaugh Dover Mfg. Co., 2154 Marshall Blvd., Chicago, Ill.
Chicago Gear Mfg. Co., 2827 Fulton St., Chicago, Ill.
Ganschow, Wm., Co., 24 N. Morgan St., Chicago, Ill.

GEARS (Rawhide)
Akron Gear & Eng. Co., The, Akron, O.
Albaugh Dover Mfg. Co., 2100 Marshall Blvd., Chicago, Ill.
Chicago Rawhide Mfg. Co., 1305 Elston Ave., Chicago, Ill.
Ganschow, Wm., Co., 24 N. Morgan St., Chicago, Ill.
Philadelphia Gear Works, E. Tioga, Philadelphia, Pa.

GEARS (Reverse Marine)
General Electric Co., Schenectady, N. Y.
Johnson, Carlyle, Machine Co., Manchester, Conn.

GEARS AND GEAR CUTTING
Akron Gear & Eng. Co., The, Akron, O.
Albaugh-Dover Mfg. Co., 2154 Marshall Blvd., Chicago, Ill.
American Adamite Co., The, 12th and Etna Sts., Pittsburgh, Pa.
Boston Gear Works Sales Co., Norfolk Downs, Mass.
Chicago Gear Mfg. Co., 2827 Fulton St., Chicago, Ill.
Chicago Rawhide Mfg. Co., The, 1305 Elston Ave., Chicago, Ill.
Farrel Foundry & Machine Co., Buffalo, N. Y.
Fawcus Machine Co., 2818 Smallman St., Pittsburgh, Pa.
Ferguson Gear Co., Gastonia, N. C.
Ganschow, Wm., Co., 24 N. Morgan St., Chicago, Ill.
James, D. O., Mfg. Co. 1120 W. Monroe St., Chicago, Ill.
Johnson, Carlyle, Machine Co., Manchester, Conn.
Link-Belt Co., 910 S. Michigan Ave., Chicago, Ill.
Mackintosh-Hemphill Co., Pittsburgh, Pa.
Morgan Construction Co., Worcester, Mass.
Niles-Bement-Pond Co., 111 Broadway, New York City.
Philadelphia Gear Works, E. Tioga, Philadelphia, Pa.
Ross-Meehan Foundries, Chattanooga, Tenn.
Stroh Steel-Hardening Process Co., Westinghouse Bldg., Pittsburgh, Pa.
Simonds Mfg. Co., 25th St. and Liberty Ave., Pittsburgh, Pa.
Taylor-Wilson Mfg. Co., McKees Rocks, Pa.

GENERATING SETS
General Electric Co., Schenectady, N. Y.

GENERATORS (Acetylene) — See ACETYLENE GENERATORS

GENERATORS (Direct and Alternating Current)
General Electric Co., Schenectady, N. Y.
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

GLASS CLEANERS (Liquid and Powder)
Skybryte Co., The, Keith Bldg., Cleveland, O.

GLOVES (Asbestos)
Oxweld Acetylene Co., 30 E. 42nd St., New York City.

GLOVES (Steel Grip)
Industrial Gloves Corp., 1213 Fullerton Ave., Chicago, Ill.

GOGGLES (Welding)
Oxweld Acetylene Co., 30 E. 42nd St., New York City.

GRATING-STEEL (Subway, Area, Sidewalk, Ventilation, Non-Slipping)
Hendrick Mfg. Co., 43 Dundaff St., Carbondale, Pa.
Irving Iron Works, Long Island City, N. Y.
Kerlow Steel Flooring Co., 232 Culver Ave., Jersey City, N. J.

GRILLES
Hendrick Mfg. Co., 43 Dundaff St., Carbondale, Pa.

GRINDERS (Crankshaft)
Landis Tool Co., Waynesboro, Pa.

GRINDERS (Electric-Pneumatic-Portable)
Cleveland Pneumatic Tool Co., 3734 E. 78th St., Cleveland, O.
Ingersoll-Rand Co., 11 Broadway, New York City.

GRINDERS (Roll)
Landis Tool Co., Waynesboro, Pa.

GRINDING MACHINES
Farrell-Cheek Steel Foundry Co., Sandusky, O.
Landis Tool Co., Waynesboro, Pa.

GRINDING PANS
National Engineering Co., 549 W. Washington Blvd., Chicago, Ill.
Phillips & McLaren Co., 24th & Smallman Sts., Pittsburgh, Pa.

GUARDS (Truck Radiator)
Irving Iron Works, Long Island City, N. Y.

GUARDS (Machinery)
Breese Bros. Co., The, 2347 Reading Rd., Cincinnati, O.

HAMMERS (Blacksmith)
Blacker Engineering Corp., Grand Central Terminal, New York City.

HAMMERS (Board Drop)
Erie Foundry Co., Erie, Pa.

HAMMERS (Chipping, Riveting and Calking)
Cleveland Pneumatic Tool Co., 3734 E. 78th St., Cleveland, O.
Ingersoll-Rand Co., 11 Broadway, New York City.

HAMMERS (Drop)
Bliss, E. W., Co., 53rd St. and 2nd Ave., Brooklyn, N. Y.
Chambersburg Engineering Co., Chambersburg, Pa.
Erie Foundry Co., Erie, Pa.
Moloch Co., The, Kaukauna, Wis.
Morgan Engineering Co., The, Alliance, Ohio.
Niles-Bement-Pond Co., 111 Broadway, New York City.
Toledo Machine & Tool Co., Toledo, O.

HAMMERS (Power)
Blacker Engineering Corp., Grand Central Terminal, New York City.
Bradley, C. C., & Son, Inc., 432 No. Franklin St., Syracuse, N. Y.
Erie Foundry Co., Erie, Pa.
Moloch Co., The, Kaukauna, Wis.
Niles-Bement-Pond Co., 111 Broadway, New York City.
Sutton-Abramsen Engineering Co., Park Bldg., Pittsburgh, Pa.

HAMMERS (Rawhide)
Chicago Rawhide Mfg. Co., 1305 Elston Ave., Chicago, Ill.

HAMMERS (Steam)
Erie Foundry Co., Erie, Pa.
Morgan Engineering Co., The, Alliance, O.

HANGERS (Door)
Myers, F. E., & Brothers Co., The, Ashland, Ohio.

HANGERS (Shaft)
Hyatt Roller Bearing Co., Newark, N. J.

HARDNESS TESTING MACHINES
Shore Instrument & Mfg. Co., Van Wyck Ave. & Carll St., Jamaica, N. Y.

HARDWARE
Chicago Forging & Mfg. Co., 2004 Southport Ave., Chicago, Ill.

HARDWOOD (Northern Wisconsin & Michigan)
Northern Hemlock & Hardwood Mfgrs. Assoc., Oshkosh, Wis.

HEAT TREATING PROCESS MALLEABLE IRON
Ohio Brass Co., Mansfield, O.

HEAT TREATING (Commercial)
Lakeside Steel Improvement Co., The, 5418 Lakeside Ave., Cleveland, Ohio.
Rockwell, The Stanley P., Co., 66 Trumbull St., Hartford, Conn.

HOISTING MACHINERY
American Terry Derrick Co., So. Kearney, N. J.
Beebe Bros., 3223 First Ave., So. Seattle, Wash.
Brown Hoisting Machinery Co., 4403 St. Clair Ave., Cleveland, Ohio.
Illinois Malleable Iron Co., 1801 Diversey Blvd., Chicago, Ill.
McMyler-Interstate Co., Bedford, O.
Marion Steam Shovel Co., The, Marion, Ohio.
Orton Crane & Shovel Co., 608 S. Dearborn St., Chicago, Ill.
Shepard Electric Crane & Hoist Co., 358 Schuyler Ave., Montour Falls, N. Y.
Treadwell Engineering Co., Easton, Pa.

HOISTS (Electric)
Box, Alfred, Co., Janney & Ontario Sts., Philadelphia, Pa.
Cleveland Electric Tramrail, Division of the Cleveland Crane & Engineering Co., Wickliffe, Ohio.
General Electric Co., Schenectady, N. Y.
Harnischfeger Corp., 38th & National, Milwaukee, Wis.
Link-Belt Co., 910 S. Michigan Ave., Chicago, Ill.
Milwaukee Electric Crane & Mfg. Corp., Milwaukee, Wis.
Reading Chain & Block Corp., Reading, Pa.
Roeper Crane & Hoist Works, 1729 No. 10th St., Reading, Pa.
Shepard Electric Crane & Hoist Co., 358 Schuyler Ave., Montour Falls, N. Y.

HOISTS (Pneumatic)
Hanna Engineering Works, 1765 Elston Ave., Chicago, Ill.
Ingersoll-Rand Co., 11 Broadway, New York City.

HOOPS AND BANDS
Acme Steel Co., 2840 Archer Ave., Chicago, Ill.
American Tube & Stamping Co., The, Bridgeport, Conn.
Ryerson, Joseph T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.
West Leechburg Steel Co., Farmers Bank Bldg., Pittsburgh, Pa.

HOOPS AND BANDS (Strips)
Sharon Steel Hoop Co., Sharon, Pa.

HOSE (Welding)
Oxweld Acetylene Co., 30 E. 42nd St., New York City.

HOT BEDS
McKee, Willis, 2422 Euclid Ave., Cleveland, O.
Morgan Construction Co., Worcester, Mass.
Treadwell Engineering Co., Easton, Pa.

HOT BLAST STOVES
McKee, Arthur G., & Co., 2422 Euclid Ave., Cleveland, O.
Riter-Conley Co., Oliver Bldg., Pittsburgh, Pa.

HYDRANTS (Fire)
Wood, R. D., & Co., 400 Chestnut St., Philadelphia, Pa.

HYDRAULIC MACHINERY
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Bethlehem Steel Co., Bethlehem, Pa.
Chambersburg Engineering Co., Chambersburg, Pa.
Morgan Engineering Co., The, Alliance, O.
United Engineering & Foundry Co., Farmers Bank Bldg., Pittsburgh, Pa.
Wood, R. D., & Co., 400 Chestnut St., Philadelphia, Pa.

HYDRAULIC PRESSES — See PRESSES (Hydraulic)

INDUSTRIAL HAULAGE EQUIPMENT
General Electric Co., Schenectady, N. Y.

INGOT MOLDS
American Adamite Co., The, 12th & Etna Sts., Pittsburgh, Pa.
Bethlehem Steel Co., Bethlehem, Pa.
Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa.
Penn Mold & Mfg. Co., Wheeling, W. Va.
Valley Mould & Iron Corp., Sharpsville, Pa.
Vulcan Mold & Iron Co., Latrobe, Pa.

INSTRUMENTS (Electric, Indicating and Recording)
General Electric Co., Schenectady, N. Y.

See Index to Advertisements for Pages Containing Advertisements of Companies Listed Above

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REASON No. 6
SELF-OPENING DIE HEADS

Did you ever stop to consider the real necessity for an automatic chaser grinder, one which grinds either die heads or collapsible tap chasers to the closest accuracy, thereby increasing the life of the chasers themselves and also allowing them to give you smooth cut and perfect threads? The R-S grinder is worth your consideration. Motor driven and self contained, it is an extremely reliable and worth-while machine to own.

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Raw and Scrubbed Gas for displacing Oil, City and Natural Gas, Coal and Coke in Furnaces of all descriptions.
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Wire Drawing and Handling Equipment for Steel, Copper and Alloys.

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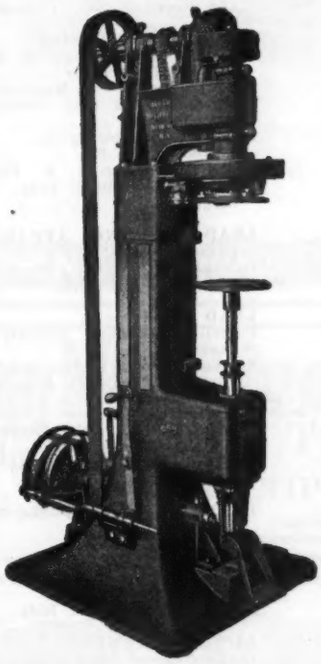
Power and Electrical Machinery, Steam, Gas and Oil Engines, Centrifugal Pumps, Condensers, Air Compressors, Power Transmission Machinery, Dust Collectors, etc.

AMS
Automatic Double Seamers



Are unequalled for crimping the ends to pails, tubs, drums and other containers of tin and heavy sheet metal.

No hand levers are used to operate Seaming Rollers.

Write for catalog and complete details.

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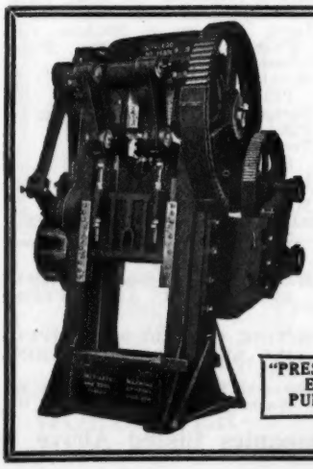
Branch Offices: Chicago, Ill., and London, Eng.



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Single and Double Crank

Where simplicity of design, efficiency and economy of performance and low upkeep are prime requisites, these presses are installed in large numbers.

Built in sizes weighing fron 7500 to 650,000 lbs. for work from the small tincup to automobile bodies, chassis frames and other more difficult forms.

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Chicago Office: 549 West Washington Blvd. Detroit Office: Room 3—250 General Motors Bldg.
Engineers, Founders and Machinists on Equipment for Sheet Metal Products

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Armstrong Cork & Insulation Co., 101 24th St., Pittsburgh, Pa.
Celite Products Co., 11 Broadway, New York City.
Quigley Furnace Specialties Co., 26 Cortlandt St., New York City.

INSULATING POWDER AND CEMENT
Celite Products Co., 11 Broadway, New York City.

INSULATION (Furnace, Boiler Settings, Ovens, Steam Pipe, etc.)
Armstrong Cork & Insulation Co., 101 24th St., Pittsburgh, Pa.
Celite Products Co., 11 Broadway, New York City.
Quigley Furnace Specialties Co., 26 Cortlandt St., New York City.

INSULATORS
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

IRON
Interstate Iron & Steel Co., 104 So. Michigan Ave., Chicago, Ill.
Newport Rolling Mill Co., Newport, Ky.
Penn Iron & Steel Co., Creighton, Pa.

IRON (Bar)
Bethlehem Steel Co., Bethlehem, Pa.
Lockhart Iron & Steel Co., Pittsburgh, Pa.

IRON (Chain)
Bethlehem Steel Co., Bethlehem, Pa.
Lockhart Iron & Steel Co., Creighton, Pa.

IRON (Engine Bolt)
Bethlehem Steel Co., Bethlehem, Pa.
Penn Iron & Steel Co., Creighton, Pa.

IRON (Norway-Swedish)
Brown-Wales Co., 493 C St., Boston, Mass.

IRON (Silvery)
Globe Iron Co., Jackson, O.
Keokuk Electro-Metals Co., Keokuk, Iowa.

IRON (Stainless)
Allegheny Steel Co., Brackenridge, Pa.
Firth-Sterling Steel Co., McKeesport, Pa.

IRON (Staybolt)
Bethlehem Steel Co., Bethlehem, Pa.
Lockhart Iron & Steel Co., Pittsburgh, Pa.
Penn Iron & Steel Co., Creighton, Pa.

IRON AND STEEL (Swedish)
Brown-Wales Co., 493 C St., Boston, Mass.
Ljusne-Woxna, Aktiebolag, Ljusne, Sweden.

IRON ORE
Cleveland-Cliffs Iron Co., Union Trust Bldg., Cleveland, O.
Hanna, The M. A., Co., Leader-News Bldg., Cleveland, O.
Hearne, William W., Inc., Real Estate Trust Bldg., Philadelphia, Pa.
Hillman Coal & Coke Co., First National Bank Bldg., Pittsburgh, Pa.
Marquette Ore Co., Rockefeller Bldg., Cleveland, O.
Park & Williams, Inc., Real Estate Trust Bldg., Philadelphia, Pa.
Pickands, Mather & Co., Union Trust Bldg., Cleveland, O.
Quinn, Clement K., & Co., Duluth, Minn.
Savage, John A., & Co., Duluth, Minn.
Snyder, W. P., & Co., Oliver Bldg., Pittsburgh, Pa.
Tutein, E. Arthur, Inc., 200 Devonshire St., Boston, Mass.

JOISTS AND STUDS (Pressed Steel)
Central Steel Co., Massillon, O.
Truscon Steel Co., Youngstown, O.

KEYS AND COTTERS (Machine)
Morton Mfg. Co., Muskegon Heights, Mich.

KEYSEATING MACHINES
Morton Mfg. Co., Muskegon Heights, Mich.

KNIVES AND SHEAR BLADES —See SHEAR BLADES AND KNIVES

LADLES
Pennsylvania Engineering Works, New Castle, Pa.
Riter-Conley Co., Oliver Bldg., Pittsburgh, Pa.
Truscon Steel Co., Youngstown, O.

LAKE PASSENGER & FREIGHT
Cleveland & Buffalo Transit Co., E. 9th St., Cleveland, O.

LATH (Expanded Metal)
Central Steel Co., Massillon, O.
Truscon Steel Co., Youngstown, O.

LATHES
McCabe, J. J., Lathe & Machinery Corp., 149 Broadway, New York City.
Ryerson, Jos. T., & Son, Inc., 10th and Rockwell Sts., Chicago, Ill.

LATHES (Roll Turning)
Becker, H. & Co., G. M. B. H., Dusseldorf, Germany.
Lewis Foundry & Machine Co., Farmers Bank Bldg. Pittsburgh, Pa.
Standard Engineering Co., Ellwood City, Pa.
United Engineering & Foundry Co., Farmers Bank Bldg., Pittsburgh, Pa.

LEAD BURNING APPARATUS (Oxy-Acetylene)
Oxweld Acetylene Co., 30 E. 42nd St., New York City.

LEAD POTS
Farrell-Check Steel Foundry Co., Sandusky, O.
Strong, Carlisle & Hammond Co., The, 326 Frankfort Ave., Cleveland, O.

LEADER PINS AND BUSHINGS
Danly Machine Specialties, Inc., 4915 N. Lincoln Ave., Chicago, Ill.

LEATHER BELTING—See BELTING (Leather)

LEVELING MACHINES
United Engineering & Foundry burgh, Pa.
Co., Farmers Bank Bldg., Pitts-

LIFTING MAGNETS
Cutler-Hammer Mfg. Co., The, Milwaukee, Wis.
Electric Controller & Mfg. Co., 2700 E. 79th St., Cleveland, O.
Ohio Electric & Controller Co., 5900 Maurice Ave., Cleveland, O.

LOCK WASHER MACHINERY
Sleeper & Hartley, Inc., Worcester, Mass.

LOCOMOTIVE CRANES — See CRANES (Locomotive)

LOCOMOTIVES (Electric)
Atlas Car & Mfg. Co., 1140 Ivanhoe Rd., Cleveland, O.
General Electric Co., Schenectady, N. Y.
Whitcomb, Geo. D., Co., Rochelle, Ill.

LOCOMOTIVES (Gasoline)
Vulcan Iron Works, 1730 Main St., Wilkes-Barre, Pa.
Whitcomb, Geo. D., Co., Rochelle, Ill.

LOCOMOTIVES (Industrial)
Poliakoff, R., 709 Sixth Ave., New York City.
Vulcan Iron Works, 1730 Main St., Wilkes-Barre, Pa.
Whitcomb, Geo. D., Co., Rochelle, Ill.

LOCOMOTIVES (Steam)
Poliakoff. R., 709 Sixth Ave., New York City.

LOCOMOTIVES (Storage Battery)
Atlas Car & Mfg. Co., 1140 Ivanhoe Rd., Cleveland, O.

LUBRICATORS (Forced Feed)
Hills-McCanna Co., 2025 Elston Ave., Chicago, Ill.

LUMBER
Northern Hemlock & Hardwood Mfrs. Assoc., Oshkosh, Wis.

LUMBER (Boxing)
Northern Hemlock & Hardwood Mfrs. Assoc., Oshkosh, Wis.

LUMBER (Crating)
California White & Sugar Pine Mfrs. Assoc., 600 New Call Bldg., San Francisco, Cal.
Northern Hemlock & Hardwood Mfrs. Assoc., Oshkosh, Wis.

LUMBER (Creosoted or Zinc Treated)
Century Wood Preserving Co., 1053 Century Bldg., Pittsburgh, Pa.

LUMBER (Flask)
California White & Sugar Pine Mfrs. Assoc., 600 New Call Bldg., San Francisco, Cal.

LUMBER (Template)
California White & Sugar Pine Mfrs. Assoc., 600 New Call Bldg., San Francisco, Cal.

MACHINE KEYS—See KEYS AND COTTER (Machine)

MACHINE WORK
Adamson Machine Co., The, Akron, O.
Air Tight Steel Tank Co., Mansion and Gloster Sts., Pittsburgh, Pa.
Akron Gear & Eng. Co., The, Akron, O.
Bliss, E. W., Co., 53rd St. and 2nd Ave., Brooklyn, N. Y.
Hanna Engineering Works, 1765 Elston Ave, Chicago, Ill.
Johnson, Carlyle, Machine Co., Manchester, Conn.
Sutton-Abramsen Engineering Co., Park Bldg., Pittsburgh, Pa.

MACHINERY (Used)
Carle Machinery Co., 546 E. Woodbridge St., Detroit, Mich.
Crawford, F. H., & Co., Inc., 50 Church St., New York City.
Fitzsimmons & Cole Machinery Co., 1208 House Bldg., Pittsburgh, Pa.
Ideal Machinery Co., Plainville, Conn.
Leaf, E. B., Real Estate Trust Bldg., Philadelphia, Pa.
Lucas, J. L., & Son, Inc., 3 Fox St., Bridgeport, Conn.
Marr-Galbreath Machinery Co., 58 Water St., Pittsburgh, Pa.
Miles Machinery Co., Saginaw, Mich.
Morey & Co., Inc., 410 Broome St., New York City.
Nashville Industrial Corp., Old Hickory, Tenn.
Niles, F. H., & Co., Inc., Claremont and Mallory Ave., Jersey City, N. J.
Potts, Henry, & Co., 1608 Bankers Trust Bldg., Philadelphia, Pa.
Reliance Machinery Sales Co., 1406 Brighton Rd., Pittsburgh, Pa.
Russell Machine Co., Pittsburgh, Pa.
Scheinert, R., Co., 123-125 N. Third St., Philadelphia, Pa.
Simmons Machine Tool Corp., Albany, N. Y.
Wickes Machinery Co., Claremont and Mallory Aves, Jersey City, N. J.

MAGNETS (Lifting)—See LIFTING MAGNETS

MALLETS (Rawhide)
Chicago Rawhide Mfg. Co., The, 1305 Elston Ave., Chicago, Ill.

MANGANESE METALS
Electro Metallurgical Sales Corp., 30 E. 42nd St., New York City.

MAGNESITE (Dead Burned)
General Refractories Co., 117 S. 16th St., Philadelphia, Pa.

MANIFOLDS (Oxygen)
Oxweld Acetylene Co., 30 E. 42nd St., New York City.

MATERIAL HANDLING MACHINERY
Browning Crane Co., E. 162nd and Waterloo Rd., Cleveland, O.
Link-Belt Co., 910 S. Michigan Ave., Chicago, Ill.
McMyler-Interstate Co., Bedford, O.
Wellman-Seaver-Morgan Co., The, 7025 Central Ave., Cleveland, O.

MERCHANT MILL EQUIPMENT
Morgan Construction Co., Worcester, Mass.
Treadwell Engineering Co., Easton, Pa.

METAL (Perforated)—See PERFORATED METAL

METAL CLEANERS
American Chemical Paint Co., Ambler, Pa.
Ford, J. B., Co., The, Wyandotte, Mich.
Hearne, William W., Inc., Real Estate Trust Bldg., Philadelphia, Pa.
Industrial Chemical Products Co., 3200 Woodbridge St., Detroit, Mich.

METAL RUST PROOFING
Parker Rust Proof Co., 2184 E. Milwaukee Ave., Detroit, Mich.

METAL SPECIALTIES AND PARTS
Erdle Perforating Co., 171 York St., Rochester, N. Y.
Mundt, Chas., & Sons, Johnston & Fairmount Aves., Jersey City, N. J.

METALS (Nonferrous)
Titanium Alloy Mfg. Co., Niagara Falls, N. Y.

METAL STAMPINGS — See STAMPINGS

METAL WORKING MACHINES—See SHEET METAL WORKING MACHINERY

METERS (Gas and Air)
Connersville Blower Co., The, Connersville, Ind.
Cutler-Hammer Mfg. Co., Milwaukee, Wis.
General Electric Co., Schenectady, N. Y.
Roots, P. H. & F. M., The, Connersville, Ind.

MILLING MACHINES
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.

MILLS (Blooming, Universal, Plate, Sheet, Etc.)
Lewis Foundry & Machine Co., Farmers Bank Bldg., Pittsburgh, Pa.
Mackintosh-Hemphill Co., Pittsburgh, Pa.
National Roll & Foundry Co., Avonmore, Pa.
Treadwell Engineering Co., Easton, Pa.

MINING MACHINERY
Allis-Chalmers Mfg. Co., Milwaukee, Wis.

MIXERS (Sand)—See SAND MIXERS, CUTTERS AND SIFTERS

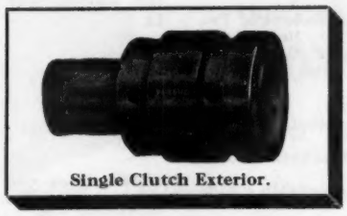
MIXING, KNEADING, TEMPERING AND PUGGING MACHINERY
National Engineering Co., 549 W. Washington Blvd., Chicago, Ill.

See Index to Advertisements for Pages Containing Advertisements of Companies Listed Above

THE JOHNSON FRICTION CLUTCH

As Used On

The New Pratt & Whitney Model B 20-In. Lathe.

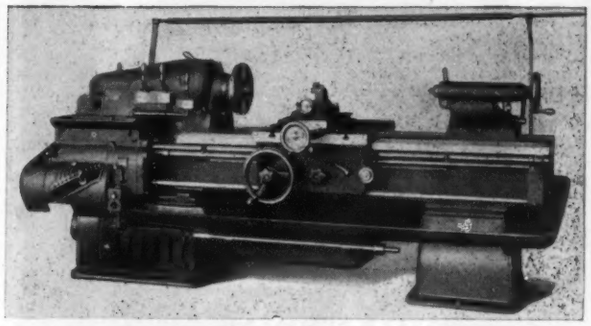


Single Clutch Exterior.

Here's the newest Pratt & Whitney Lathe, the 20-Inch Model B. The No. 6 Johnson Special Single Clutch on this lathe is operated by a control rod extending the length of the bed. The clutch is used for starting and stopping the machine without stopping the motor.

On the 20-Inch Lathe the belt from the motor drives a shaft at the rear of the machine which connects with the spindle through the clutch and headstock gears. Equip your lathes with Johnson Clutches.

Write for White Catalog



COURTESY: The Pratt & Whitney Co., Hartford, Conn.

THE CARLYLE JOHNSON MACHINE CO. MANCHESTER CONN.

Thomas Spacing Machine Co.

THOMAS SPACING TABLES

Fulton Building
Pittsburgh, Pa.

THOMAS MULTIPLE PUNCHES

Eastern Sales Office:
915 Commercial Trust Bldg., Philadelphia, Pa.

Western Sales Office:
936 Monadnock Block, Chicago, Ill.

BIRDSBORO

STEEL FOUNDRY AND MACHINE COMPANY
BIRDSBORO, PENNSYLVANIA

DESIGNERS AND BUILDERS of hydraulic presses and equipment for boiler, structural and railroad shops, shipyards, rubber mills, linoleum plants, asbestos mills and other industries requiring hydraulic equipment. Hydraulic Operating Valves. Special Machinery. Rolling Mills. Rolling Mill Machinery. Steel and Iron Castings. Rolls: "Durite". Steel Chilled and Sand. Railroad Castings. Bolsters. Side Frames. Forging Ingots. Crushing and Concentrating Machinery. Jackson Belt Lacers.

See our advertisement in this week's Iron Age—or last week's Iron Trade Review.

Rolling Mill Equipment
Chill Rolls
Gears and Gear Reduction Units

LEWIS FOUNDRY & MACHINE CO.
PITTSBURGH, PA., U. S. A.

CLARK MANUAL CONTROLLERS

Reversing Face Plate Type

THE "THREE C" BRAKE

ELECTRICAL OR MECHANICAL OPERATION

The Clark Controller Co., 1146 E. 152nd St., Cleveland, Ohio

MORGAN CONSTRUCTION COMPANY

Rolling Mills Producer Gas Machines
Wire Mills Reversing Valves

(See first issue each month for SPECIAL ANNOUNCEMENT)

WORCESTER MASS., U. S. A.

TREADWELL

Better Grade Machinery

Merchant Mills
Wire Rod Mills
Hot Strip Mills

Hoisting Machinery
Special Machinery
Steel and Iron Castings

Treadwell Engineering Company, Easton, Pa.

MOLDING MACHINES
American Foundry Equipment Co., 407 Byrkit Ave., Mishawaka, Ind.
Beardsley & Piper Co., 2541 N. Keeler Ave., Chicago, Ill.
Herman Pneumatic Machine Co., 806 Union Bank Bldg., Pittsburgh, Pa.

MOLDING MACHINES (Tractor Type Sand Throwing)
Beardsley & Piper Co., 2541 N. Keeler Av., Chicago, Ill.

MOLDS (Ingot) — See INGOT MOLDS

MONEL METAL
International Nickel Co., 67 Wall St., New York City.
Williams & Co., Inc., 915-937 Pennsylvania Ave., Pittsburgh, Pa.

MONORAIL SYSTEMS
Cleveland Electric Tramrail, Division of the Cleveland Crane & Engineering Co., Wickliffe, O.

MOTORS (Electric)
General Electric Co., Schenectady, N. Y.
Shepard Electric Crane & Hoist Co., 358 Schuyler Ave., Montour Falls, N. Y.
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

MUCK BAR
Bethlehem Steel Co., Bethlehem, Pa.
Penn Iron & Steel Co., Creighton, Pa.

NAILS
American Steel & Wire Co., 208 S. La Salle St., Chicago, Ill.
Bethlehem Steel Co., Bethlehem, Pa.
Columbia Steel Corp., Balfour Bldg., San Francisco, Cal.
Pittsburgh Steel Co., P. O. Box 72, Pittsburgh, Pa.
Youngstown Sheet & Tube Co., Youngstown, O.

NAILS (Coated and Galvanized)
American Steel Co., Ellwood City, Pa.
Youngstown Sheet & Tube Co., The, Youngstown, O.

NICKEL
American Nickel Corp., Clearfield, Pa.
International Nickel Co., 67 Wall St., New York City.
United States Nickel Co., New Brunswick, N. J.
Williams & Co., Inc., 915-937 Pennsylvania Ave., Pittsburgh, Pa.

NICKEL STEEL (Cold Drawn)
Bethlehem Steel Co., Bethlehem, Pa.

NIPPLES (Brass and Iron)
Liberty Iron Pipe & Nipple Works, 62 Greene St., New York City.

NITROGEN (Gas)
Linde Air Products Co., 30 E. 42nd St., New York City.

NUTS
Bethlehem Steel Co., Bethlehem, Pa.
Clark Bros. Bolt Co., Milldale, Conn.
Lake Erie Bolt & Nut Co., 915 E. 63rd St., Cleveland, O.
Oliver Iron & Steel Corp., So. 10th and Muriel Sts., Pittsburgh, Pa.
Rhode Island Tool Co., Providence, R. I.
Rockford Bolt Co., 220 Mill St., Rockford, Ill.
Russell, Burdsall & Ward Bolt & Nut Co., Port Chester, N. Y.

OIL (Fuel)—See FUEL OIL

OIL BURNING EQUIPMENT
Hauck Mfg. Co., 114 Tenth St. Brooklyn, N. Y.
Liquid Fuel Equipment Co., The, 6565 Russell St., Detroit, Mich.

OIL RECOVERY SYSTEMS
Barrett, Leon J., Co., P. O. Box 44, Worcester, Mass.

OPEN-HEARTH FURNACES—See FURNACES (Open Hearth)

ORES-CHROME (Lump or Ground)
General Refractories Co., 117 S. 16th St., Philadelphia, Pa.

OVENS (Coke By-Product Recovery)
Koppers Co., The, Pittsburgh, Pa.

OXY-ACETYLENE WELDING AND CUTTING—See WELDING AND CUTTING APPARATUS AND SUPPLIES (Oxy-Acetylene Process)

OXYGEN IN CYLINDERS
Linde Air Products Co., 30 E. 42nd St., New York City.

PACKING (Leather)
Chicago Rawhide Mfg. Co., 1305 Elston Ave., Chicago, Ill.

PAINTS
Truscon Steel Co., Youngstown, O.

PATTERN LUMBER (White and Sugar Pine)
California White & Sugar Pine Mfrs. Assoc., 600 New Call Bldg., San Francisco, Cal.

PERFORATED METAL
Chicago Pneumatic Co., 2445 W. 24th Place, Chicago Ill.
Erdle Perforating Co. 171 York St., Rochester, N. Y.
Harrington & King Perforating Co., The, 5634 Fillmore St., Chicago, Ill.
Hendrick Mfg. Co., 43 Dundaff St., Carbondale, Pa.
Mundt, Chas. & Sons, Johnston & Fairmount Ave., Jersey City, N. J.
Reliable Perforating Co., 1925 N. Paulina St., Chicago, Ill.
Standard Staming & Perforating Co., 4720-22 W. 5th Ave., Chicago, Ill.

PERMANENT MOLDING MACHINES—See MOLDING MACHINES (Permanent)

PICKLING COMPOUND
American Chemical Paint Co., Ambler, Pa.
Hearne, William W., Inc., Real Estate Trust Bldg., Philadelphia, Pa.

PICKLING MACHINES
Mesta Machine Co., Homestead, Pa.

PICKS, MATTOCKS, ETC.
Oliver Iron & Steel Corp., So. 10th and Muriel Sts., Pittsburgh, Pa.

PIG IRON
Bethlehem Steel Co., Bethlehem, Pa.
Cleveland-Cliffs Iron Co., Union Trust Bldg., Cleveland, O.
Donner Steel Co., Inc., P. O. Box 1000, Buffalo, N. Y.
Eaton, Rhodes & Co., First National Bank Bldg., Cincinnati, O.
Globe Iron Co., Jackson, O.
Hanna, The M. A., Co., Leader-News Bldg., Cleveland, O.
Illinois Steel Co., 208 So. La Salle St., Chicago, Ill.
Lavino, E. J., & Co., Bullit Bldg., Philadelphia, Pa.
Ljusne-Woxna, Aktiebolag, Ljusne, Sweden.
Mohr, J. J., & Son, Bullitt Bldg., Philadelphia, Pa.
Park & Williams, Inc., Real Estate Trust Bldg., Philadelphia, Pa.
Pickands, Mather & Co., Union Trust Bldg., Cleveland, O.
Pilling & Co., Inc., 1500 Chestnut St., Philadelphia, Pa.
Rogers, Brown & Crocker Bros., Inc., 21 E. 40th St., New York City.
Savage, John A., & Co., Duluth, Minn.
Snyder, W. P., & Co., Oliver Bldg., Pittsburgh, Pa.
Stewart Furnace Co., 1854 Union Trust Bldg., Cleveland, O.
Tutein, E. Arthur, Inc., 200 Devonshire St., Boston, Mass.
Valley Mould & Iron Corp., Sharpsville, Pa.
Wheeling Steel Corp., Wheeling, W. Va.
Wood, Alan, Iron & Steel Co., Weidener Bld., Philadelphia, Pa.

PILE DRIVERS
Weidener Bldg., Philadelphia, Pa.
McMyler-Interstate Co., Bedford, O.
Orton Crane & Shovel Co., 608 S. Dearborn St., Chicago, Ill.

PILING (Steel Sheet)
Bethlehem Steel Co., Bethlehem, Pa.
Wemlinger, Inc., 149 Broadway, Nw York City.

PINIONS—See GEARS AND GEAR CUTTING

PIPE (Brass, Bronze and Copper)
American Brass Co., 25 Broadway, New York City.

PIPE (Cast Iron)
United States Cast Iron Pipe & Foundry Co., Burlington, N. J.

PIPE (Iron)
Liberty Iron Pipe & Nipple Works, 62 Greene St., New York City.

PIPE (Riveted Steel)
Abendroth & Root Mfg. Co., Woolworth Bldg., New York City.

PIPE (Spiral Riveted)
Adendroth & Root Mfg. Co., Woolworth Bldg., New York City.

PIPE (Standard)
Wheeling Steel Corp., Wheeling, W. Va.

PIPE (Steel)
Central Tube Co., First National Bank Bldg., Pittsburgh, Pa.
Jones & Laughlin Steel Corp., Pittsburgh, Pa.
National Tube Co., Frick Bldg., Pittsburgh, Pa.
Republic Iron & Steel Co., Youngstown, O.
Youngstown Sheet & Tube Co., Youngstown, O.

PIPE (Wrought Steel)
Central Tube Co., First National Bank Bldg., Pittsburgh, Pa.
National Tube Co., Frick Bldg., Pittsburgh, Pa.

PIPE BENDING MACHINES
American Pipe Bending Machine Co., 93 Pearl St., Boston, Mass.

PIPE CUTTING AND THREADING MACHINERY
Curtis & Curtis Co., 316 Garden St., Bridgeport, Conn.
Jarecki Mfg. Co., Erie, Pa.
Landis Machine Co., Waynesboro, Pa.
Standard Engineering Co., Ellwood City, Pa.
Williams Tool Corp., W. 12th and Liberty, Erie, Pa.

PIPE FITTINGS
Illinois Malleable Iron Co., 1801 Diversey Blvd., Chicago, Ill.
Jenkins Bros., 80 White St., New York City.
Liberty Iron Pipe & Nipple Works, 62 Greene St., New York City.
Power Piping Co., 829 Beaver Ave., Pittsburgh, Pa.

PIPE MILL MACHINERY
Taylor-Wilson Mfg. Co., McKees Rocks, Pa.

PIPE STRAIGHTENING MACHINES
Logemann Brothers Co., 3126 Burleigh St., Milwaukee. Wis.
Taylor-Wilson Mfg. Co., McKees Rocks, Pa.

PIPE WRENCHES—See WRENCHES (Pipe)

PIPING CONTRACTORS
Floersheim, B., & Co., 622 Farmers Bank Bldg., Pittsburgh, Pa.
Power Piping Co., 829 Beaver Ave., Pittsburgh, Pa.
Power Piping Co., 829 Beaver Av., Pittsburgh, Pa.

PLANERS AND SHAPERS
Morton Mfg. Co., Muskegon, Mich.
Rockford Machine Tool Co., 2400 Kishwaukee Ave., Rockford, Ill.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.

PLATE CASTORS
Hyatt Roller Bearings Co., Newark, N. J.

PLATES (Circular and Disk Steel)
Truscon Steel Co., Youngstown, O.

PLATES (Iron and Steel)
Bethlehem Steel Co., Bethlehem, Pa.
Morris, Wheeler & Co., 30th and Locust St., Philadelphia, Pa.

PLATES (Rolled Steel—Floor)
American Pressed Steel Co., Commercial Trust Bldg., Philadelphia, Pa.
Central Iron & Steel Co., Harrisburg, Pa.
Wood, Alan, Iron & Steel Co., Widener Bldg., Philadelphia, Pa.

PLATES (Sheared and Universal)
Bethlehem Steel Co., Bethlehem, Pa.
Carnegie Steel Co., 431 Carnegie Bldg., Pittsburgh, Pa.
Central Iron & Steel Co., Harrisburg, Pa.
Granite City Steel Works, The, Granite City, Ill.
Illinois Steel Co., 208 La Salle St., Chicago, Ill.
Illinois Steel Warehouse Co., 1219 Wabansia Ave. Chicago, Ill.
Inland Steel Co., First National Bank Bldg., Chicago, Ill.
Morris & Bailey Division, Oliver Iron & Steel Corp., Wilson Station, Pittsburgh, Pa.
National Enameling & Stamping Co., Granite City, Ill.
Newport Rolling Mill Co., Newport, Ky.
Youngstown, O.
Republic Iron & Steel Co.,
Ryerson, Jos. T., & Son Inc., 16th and Rockwell Sts., Chicago, Ill.
Wood, Alan, Iron & Steel Co., Widener Bldg., Philadelphia, Pa.
Youngstown Sheet & Tube Co., Youngstown, O.

PLATES (Terne and Tin)—See TIN PLATE

PLATING (Chrome Alloy)
Chemical Treatment Co., 26 Broadway, New York City.

PLATING (Rust, Acid, and Heat Resisting)
Chemical Treatment Co., 26 Broadway, New York City.

PNEUMATIC DIE CUSHIONS
Marquette Tool & Mfg. Co., The, 319 W. Ohio St., Chicago, Ill.

PNEUMATIC TOOLS—See TOOLS—(Pneumatic)

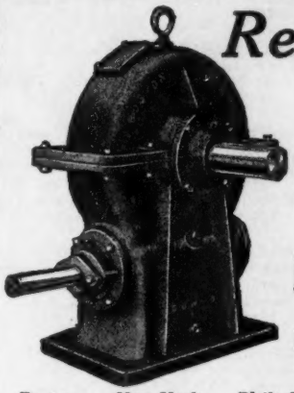
POLES (Tubular Steel)
National Tube Co., Frick Bldg., Pittsburgh, Pa.

PORTABLE LOADERS (Bucket or Belt)
Link-Belt Co., 910 So. Michigan Ave., Chicago, Ill.

POWDERED COAL EQUIPMENT
Combustion Engineering Corp., 43 Broad St., New York City.
Fuller-Lehigh Co., Fullerton, Pa.

POWER TRANSMISSION
Jones, W. A., Foundry & Machine Co., 4437 W. Roosevelt Ave., Chicago, Ill.
Link-Belt Co., 910 S. Michigan Ave., Chicago, Ill.

See Index to Advertisements for Pages Containing Advertisements of Companies Listed Above



Reduce Your Costs!

new booklet—
'Modern Speed Reduction' tells how.

BOSTON GEARS

Boston Gear Works Sales Co.
NORFOLK DOWNS, MASS.

Boston New York Philadelphia Cleveland Chicago

"TRY SIMONDS GEARS"
Accurately Cut—All Kinds—All Materials
The Simonds Manufacturing Co., PITTSBURGH, Pa.

FERGUSON GEAR CO.
CUT GEARS SILENT CHAINS
BEVEL SPUR SPIRAL WORM SPROCKETS
RAWHIDE BAKELITE AND HARDENED STEEL PINIONS
MEMBER AMERICAN GEAR MANUFACTURERS ASSOCIATION
GASTONIA, NORTH CAROLINA

CUT GEARS
Mitres—Worms and Worm Gears—Spur
Bevel—Herring-bone—Bakelite
Rawhide Gears and Pinions
for Industrial and Mill Service
Chicago Gear Manufacturing Company
2827 Fulton Street Chicago

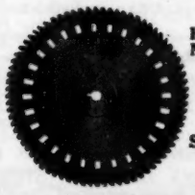
AKRON GEARS

Cut Gears for Industrial and Mill Service

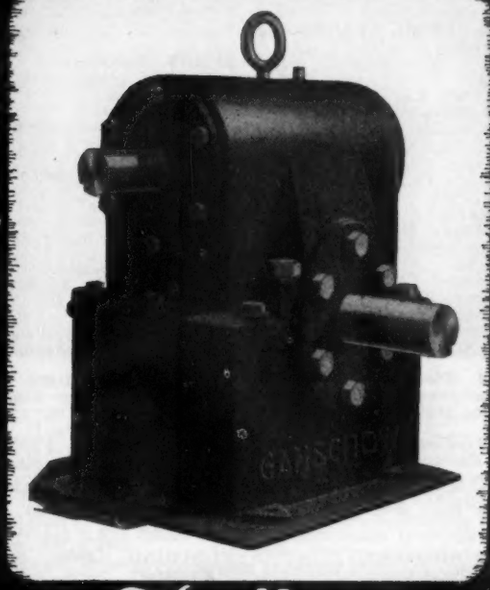
The Akron Gear & Engineering Co.
Akron, Ohio

SAWS FOR METAL CUTTING
Inserted Tooth; Solid Tooth; Milling; Hot

Pneumatic Hammer Rivet Sets and Chisel Blanks
Hardened Steel Specialties
Also
High Speed Circular Metal Cut-off Sawing Machines



Send for our latest catalog.
HUNTER
Saw & Machine Co.
5656 Butler St.
Pittsburgh, Pa.



The New
Ganschow Worm Gear Power Transformer

The William Ganschow Company presents this advanced type of worm gear speed transformer, permitting heavier and more constant service, as well as wider load fluctuation, than has ever been found practical with previous types of worm gear speed reducers.

Greater efficiency, dependability, and flexibility, coupled with the wider range of applications, are features worthy of your investigation. Our very complete engineering service is available, and we will gladly help you to apply Ganschow Worm Gear principles to your speed reduction problems.

Ask for the new Ganschow Worm Gear Speed Transformer Bulletin.

William Ganschow Company
24 North Morgan Street, Chicago
Plants—Chicago and Peoria, Ill.

BIRMINGHAM - - - - C. B. Davis Engineering Co.
BOSTON - - - - - - - - - - - Allen & Drew
NEW YORK - - - - - - - L. C. Biglow & Co., Inc.
SALT LAKE CITY - F. C. Richmond Machinery Co.
SEATTLE - - The Percy E. Wright Engineering Co.
SAN FRANCISCO The Percy E. Wright Engineering Co.
DETROIT - - F. J. Neidermiller

Ganschow
SPEED TRANSFORMERS
CUT GEARS · FABROIL NOISELESS PINIONS

PREHEATING APPARATUS
Oxweld Acetylene Co., 30 E. 42nd St., New York City.

PRESSED METAL—See STAMPINGS

PRESSED STEEL PARTS—See STAMPINGS

PRESSES
Bliss, E. W., Co., 53rd St. and 2nd Ave., Brooklyn, N. Y.
Cleveland Punch & Shear Works, 3917 St. Clair Ave., Cleveland, O.
Erie Foundry Co., Erie, Pa.
Federal Press Co., Elkhart, Ind.
Loshbough-Jordan Tool & Machine Co., Elkhart, Ind.
Mackintosh-Hemphill Co., Pittsburgh, Pa.
Mesta Machine Co., Homestead, Pa.
Moloch Co., The, Kaukauna, Wis.
Toledo Machine & Tool Co., Toledo, O.

PRESSES (Die Cutting)
Logemann Bros. Co., 3126 Burleigh St., Milwaukee, Wis.

PRESSES (Forging)
Morgan Engineering Co., The, Alliance, O.
United Engineering & Foundry Co., Farmers Bank Bldg., Pittsburgh, Pa.

PRESSES (Hydraulic)
Bethlehem Steel Co., Bethlehem, Pa.
Birdsboro Steel Foundry & Machine Co., Birdsboro. Pa.
Bliss, E. W., Co., 53rd St. and 2nd Ave., Brooklyn, N. Y.
Chambersburg Engineering Co, Chambersburg, Pa.
Logemann Brothers Co., 3126 Burleigh St., Milwaukee, Wis.
Mackintosh-Hemphill Co., Pittsburgh, Pa.
Morgan Engineering Co., The Alliance, O.
Wood, R. D., & Co., 400 Chestnut St., Philadelphia, Pa.

PRESSES (Metal Drawing, Etc.)
Bliss, E. W., Co., 53rd St. and 2nd Ave., Brooklyn, N. Y.
Federal Press Co., Elkhart, Ind.
Loshbough-Jordan Tool & Machine Co., Elkhart, Ind.

PRESSES (Roofing & Corrugating)
Loshbough-Jordan Tool & Machine Co., Elkhart, Ind.
Streine Tool & Mfg. Co., The New Bremen, Ohio.

PRESSES (Scrap Bundling and Baling)
Logemann Brothers Co., 3126 Burleigh St., Milwaukee, Wis.

PRESSES (Shaft and Pipe Straightening—Hydraulic)
Logemann Bros. Co., 3126 Burleigh St., Milwaukee, Wis.

PRESSES (Straightening)
United Engineering & Foundry Co., Farmers Bank Bldg., Pittsburgh, Pa.

PRESSES (Sub)
U. S. Tool Co., Inc., Ampere, N. J.

PRODUCER GAS SYSTEMS—See GAS PRODUCER PLANTS

PUMPS
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Connersville Blower Co., The, Connersville, Ind.
Deming Co., The, Salem, Ohio.

PUMPS (Boiler Feed)
Ingersoll-Rand Co., 11 Broadway, New York City.

PUMPS (Centrifugal)
Ingersoll-Rand Co., 11 Broadway, New York City.

PUMPS (Hand & Power)
Myers, F. E., & Brother Co., The, Ashland, Ohio.

PUMPS (Hydraulic)
Logemann Brothers Co., 3126 Burleigh St., Milwaukee, Wis.
Wood, R. D., & Co., 400 Chestnut St., Philadelphia, Pa.

PUMPS (Force)
Deming Co., The, Salem, Ohio.

PUMPS (Industrial)
Deming Co., The, Salem, Ohio.

PUMPS (Power)
Deming Co., The, Salem, Ohio.

PUMPS (Spray)
Deming Co., The, Salem, Ohio.

PUMPS (Steam)
Ingersoll-Rand Co., 11 Broadway, New York City.

PUNCHES (Multiple)
Cleveland Punch & Shear Works Co., Inc., 3917 St. Clair Ave., Cleveland, Ohio.
Thomas Spacing Machine Co., Fulton Bldg., Pittsburgh, Pa.

PUNCHES AND DIES
Cleveland Punch & Shear Works Co., The, 3917 St. Clair Ave., Cleveland, O.
Marchant, George F., Co., 1434 So. Rockwell St., Chicago, Ill.

PUNCHES & SHEARS (Hand)
Whitney Metal Tool Co., Rockford, Ill.

PUNCHING AND SHEARING Machinery
Beatty Machine & Mfg. Co., Hammond, Ind.
Bliss, E. W., Co., 53rd St. and 2nd Ave., Brooklyn, N. Y.
Chambersburg Engineering Co., Chambersburg, Pa.
Cleveland Punch & Shear Works, 3917 St. Clair Ave., Cleveland, O.
Long & Allstatter Co., Hamilton, O.
Mackintosh-Hemphill Co., Pittsburgh, Pa.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.

RACKS (Machine)
Ganschow, Wm., Co., 24 N. Morgan St., Chicago, Ill.

RAILS
Carnegie Steel Co., 431 Carnegie Bldg., Pittsburgh, Pa.
Frank, M. K., Union Trust Bldg., Pittsburgh, Pa.
Illinois Steel Co., 203 S. La Salle St., Chicago, Ill.
Richardson & Co., Inc., 518 Oliver Bldg., Pittsburgh, Pa.
Tennessee Coal, Iron & Railroad Co., Brown-Marx Bldg., Birmingham, Ala.

RAILS (Girder)
Bethlehem Steel Co., Bethlehem, Pa.

REDUCERS (Speed-Worm and Spur) See SPEED REDUCERS (Worm and Spur)

REFRACTORIES
Ashland Fire Brick Co., Ashland, Ky.
Brighton Fire Brick Co., Block House Run, New Brighton, Pa.
Carborundum Co., The, Buffalo and 18th Sts., Niagara Falls, N. Y.
Crescent Refractories Co., Curwensville, Pa.
Dover Fire Brick Co., 1012 Nat'l City Bank Bldg., Cleveland, O.
Eureka Fire Brick Works, First National Bank Bldg., Pittsburgh, Pa.
General Refractories Co., 117 S. 16th St., Philadelphia, Pa.
Harbison Walker Refractories Co., Farmers Bank Bldg., Pittsburgh, Pa.
Hydraulic Press Brick Co., Central National Bank Bldg., St. Louis, Mo.
Illinois Clay Products Co., 214 Barber Bldg., Joliet, Ill.
Kier Fire Brick Co., Oliver Bldg., Pittsburgh, Pa.
Laclede Christy Clay Products Co., St. Louis, Mo.
Lavino, E. J., & Co., Bullitt Bldg., Philadelphia, Pa.
Queen's Run Refractories Co., Inc., Lock Haven, Pa.
Soisson, Joseph, Fire Brick Co., Connellsville, Pa.
Stowe-Fuller Refractories Co., The, 1650 Union Trust Bldg., Cleveland, O.
Superior Basic Brick Co., 517 Bessemer Bldg., Pittsburgh, Pa.
Union Mining Co., 1113 Fidelity Bldg., Baltimore, Md.
U. S. Refractories Corp., Mt. Union, Pa.
Walsh Fire Clay Products Co., 4070 N. Main St., St. Louis, Mo.

REGISTERS (Heating and Ventilating)
Auer Register Co., The, Payne Ave. and E. 37th St., Cleveland, Ohio.

REGULATORS (Compressed Gas)
Oxweld Acetylene Co., 30 E. 42nd St., New York City.

REINFORCEMENTS (Steel)
Truscon Steel Co., Youngstown, O.

RHEOSTATS
Electric Controller & Mfg. Co., 2700 E. 79th St., Cleveland, O.

RINGS (Welded Iron & Steel)
Akron-Selle Co., Akron, O.

RINGS (Weldless, Forged)
Cann & Saul Steel Co., 516 Commerce St., Philadelphia, Pa.

RIVET FORGES (Oil burning)
Hauck Mfg. Co., 114 Tenth St., Brooklyn, N. Y.

RIVET HEATERS (Electric)
General Electric Co., Schenectady, N. Y.

RIVET SETS
Cleveland Punch & Shear Works Co., Inc., 3917 St. Clair Ave., Cleveland, Ohio.
Hunter Saw & Machine Co., 5656 Butler St., Pittsburgh, Pa.
Marchant, George F., Co., 1434 S. Rockwell, Chicago, Ill.

RIVETERS (Pneumatic)
Cleveland Pneumatic Tool Co., 3734 E. 78th St., Cleveland, O.
Hanna Engineering Works, 1765 Elston Ave., Chicago, Ill.

RIVETING MACHINERY
Hanna Engineering Works, 1765 Elston Ave., Chicago, Ill.
Shuster, The F. B., Co., New Haven, Conn.
Wood, R. D., & Co., 400 Chestnut St., Philadelphia, Pa.

RIVETS
Bethlehem Steel Co., Bethlehem, Pa.
Illinois Steel Warehouse Co., 1319 Wabansia Ave., Chicago, Ill.
Interstate Iron & Steel Co., 104 S. Michigan Ave., Chicago, Ill.
Progressive Mfg. Co., Torrington, Conn.
Russell, Burdsall & Ward Bolt & Nut Co., Port Chester, N. Y.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.

ROD MILLS
Morgan Construction Co., Worcester, Mass.
Treadwell Engineering Co., Easton, Pa.
Vaughn Machinery Co., The, Cuyahoga Falls, O.

RODS (Acid Resistant)
Alcumite Corp., The, Dayton, O.

RODS (Brass, Bronze, Copper and Nickel Silver)
American Brass Co., 25 Broadway, New York City.

RODS (Drill)
Globe Wire Co., Sharpsburg, Pa.
Kidd Drawn Steel Co., Aliquippa, Pa.
Pittsburgh Tool Steel Wire Co., Monaca, Pa.
Wheelock, Lovejoy & Co., Inc., 128 Sidney St., Cambridge, Mass.

RODS (Iron and Steel)
Bethlehem Steel Co., Bethlehem, Pa.

RODS (Welding)—See WELDING RODS

ROLL HEATERS (Electric)
Freyn Engineering Co., 310 S. Michigan Ave., Chicago, Ill.

ROLLING DOORS AND SHUTTERS
Kinner Manufacturing Co., 818-868 Field Ave., Columbus, O.
Moeschl-Edwards Const. Co., The, 120 W. 9th St., Covington, Ky.

ROLLING MILL BEARINGS
Hyatt Roller Bearing Co., Newark, N. J.
Norma-Hoffmann Bearing Co., Stamford, Conn.

ROLLING MILL EQUIPMENT
Adamson Machine Co., The, Akron, Ohio.
Alliance Machine Co., The, Alliance, O.
Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa.
Blake & Johnson Co., The, 185 N. Elm St., Waterbury, Conn.
Hyde Park Foundry & Machine Co., Hyde Park, Pa.
Kane & Roach, Niagara and Shonard Sts., Syracuse, N. Y.
Lewis Foundry & Machine Co., Farmers Bank Bldg., Pittsburgh, Pa.
Mackintosh-Hemphill Co., Pittsburgh, Pa.
Mesta Machine Co., Homestead, Pa.
Monessen Foundry & Machine Co., Monessen, Pa.
Morgon Construction Co., Worcester, Mass.
Morgan Engineering Co., The, Alliance, O.
National Roll & Foundry Co., Avonmore, Pa.
Standard Engineering Co., Elwood City, Pa.
Sutton-Abramsen Engineering Co., Park Bldg., Pittsburgh, Pa.
Treadwell Engineering Co., Easton, Pa.
United Engineering & Foundry Co., Farmers Bank Bldg., Pittsburgh, Pa.
Wheeling Mold & Foundry Co., Wheeling, W. Va.

ROLLING MILL FURNACES
Chapman-Stein Furnace Co., Mt. Vernon, Ohio.

ROLLING MILLS (Consulting Engineers)
Morgan Construction Co., Worcester, Mass.
Treadwell Engineering Co., Easton, Pa.

ROLLING MILLS (Contracting Engineers)
McKee, Arthur G., & Co., 2422 Euclid Ave., Cleveland, Ohio.

ROLLS
American Adamite Co., The, 12th & Etna Sts., Pittsburgh, Pa.
Hyde Park Foundry & Machine Co., Hyde Park, Pa.
Lewis Foundry & Machine Co., Farmers Bank Bldg., Pittsburgh, Pa.
Mackintosh-Hemphill Co., Pittsburgh, Pa.
Pittsburgh Rolls Corp., 41st St. and A. V. Ry., Pittsburgh, Pa.
Standard Engineering Co., Ellwood City, Pa.
United Engineering & Foundry Co., Farmers Bank Bldg., Pittsburgh, Pa.
Wheeling Mold & Foundry Co., Wheeling, W. Va.

ROLLS (Hardened Steel)
Bethlehem Steel Co., Bethlehem, Pa.
Midvale Co., The, Nicetown, Philadelphia, Pa.
Pittsburgh Rolls Corp., 41st St. and A. V. Ry., Pittsburgh, Pa.
Wheeling Mold & Foundry Co., Wheeling, W. Va.

ROLLS (Sand Chilled and Steel)
Adamson Machine Co., The, Akron, Ohio.
Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa.

See Index to Advertisements for Pages Containing Advertisements of Companies Listed Above

NOISELESS DURABLE
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THE CHICAGO RAWHIDE MFG. CO.
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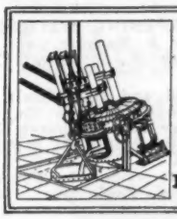
Chamber of Commerce Bldg.
Pittsburgh, Penna.
Chicago San Francisco Detroit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Most Rapid and efficient for making
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Steel Castings, Malleable Iron, Grey Iron
Carbide, Ferro-Alloys etc.
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FURNACES
HOLCROFT & COMPANY DETROIT CONTRACTING ENGINEERS
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EQUIPMENTS
Pulverized Coal Fuel Oil Gas
FULLER-LEHIGH COMPANY
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FULLERTON, PA.

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Oil Burners
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Pittsburgh, Pa.

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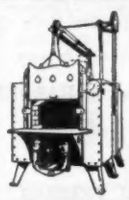
RECUPERATORS
INTERNATIONAL FURNACE CO.
KEENAN BLDG., PITTSBURGH, PA.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INDUSTRIAL FURNACES
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Engineers and Manufacturers
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Fuel Oil Burner
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Trimming Presses Punches and Shears
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Presses, Riveters, Pumps and Accumulators
Special Machinery Designed and Built
Chambersburg Engineering Co., Chambersburg, Pa.

ROLLS (Sand Chilled and Steel) Continued
Lewis Foundry & Machine Co., Farmers Bank Bldg., Pittsburgh, Pa.
Mackintosh-Hemphill Co., Pittsburgh, Pa.
National Roll & Foundry Co., Avonmore, Pa.
Pittsburgh Rolls Corp., 41st St. and A. V. Ry., Pittsburgh, Pa.
United Engineering & Foundry Co., Farmers Bank Bldg., Pittsburgh, Pa.
Wheeling Mold & Foundry Co., Wheeling, W. Va.

ROLLS (Special)
Pittsburgh Rolls Corp., 41st St. and A. V. Ry., Pittsburgh, Pa.

ROLLS (Wood)
Dart, E. M., Mfg. Co., Providence, R. I.

ROOFING AND SIDING (Iron and Steel)
American Rolling Mill Co., Middletown, O.
American Sheet & Tin Plate Co., Frick Bldg., Pittsburgh, Pa.
Newport Rolling Mill Co., Newport, Ky.

ROPE SOCKETS (Cast Steel)
Chicago Steel Foundry Co., Kedzie Ave. at 37th St., Chicago, Ill.

RUST PREVENTATIVE
American Chemical Paint Co., Ambler, Pa.
Parker Rust Proof Co., 2184 E. Milwaukee Ave., Detroit, Mich.

RUST REMOVING COMPOUND
American Chemical Paint Co., Ambler, Pa.

SAFE ENDS (Boiler Tube)
National Tube Co., Frick Bldg., Pittsburgh, Pa.

SAFETY DEVICES (Electric)
Electric Controller & Mfg. Co., 2700 E. 79th St., Cleveland, O.

SAND
Portage Silica Co., The, 602 Stambaugh Bldg., Youngstown, O.
Standard Silica Co., 39 S. LaSalle St., Chicago, Ill.

SAND (Molding)
Rogers, Brown & Crocker Bros., Inc., 21 E. 40th St., New York City.
Standard Silica Co., 39 S. LaSalle St., Chicago, Ill.

SAND (Sandblast)
Portage Silica Co., The, 602 Stambaugh Bldg., Youngstown, O.
Standard Silica Co., 39 S. LaSalle St., Chicago, Ill.
United States Silica Co., 122 South Michigan Ave., Chicago, Ill.

SAND (Silica)
Standard Silica Co., 39 S. La Salle St., Chicago, Ill.
United States Silica Co., 122 So. Michigan Ave., Chicago, Ill.

SANDBLAST ABRASIVES (Shot and Grit)
Pittsburgh Crushed Steel Co., 61st & A. V. R. R., Pittsburgh, Pa.

SANDBLAST EQUIPMENT AND ACCESSORIES
American Foundry Equipment Co., 407 Byrkit Ave., Mishawaka, Ind.
Mott Sand Blast Mfg. Co., 4611-4621 Flournoy St., Chicago, Ill.
Pangborn Corporation, P. O. Box 858, Hagerstown, Md.
Sly, W. W., Mfg. Co., 4700 Train Ave., Cleveland, O.

SAND CONVEYING AND HANDLING MACHINERY
Bartlett & Snow, C. O., Co., 6203 Harvard Ave., Cleveland, O.
Beardsley & Piper Co., 2541 N. Keeler Ave., Chicago, Ill.
Link-Belt Co., 910 So. Michigan Ave., Chicago, Ill.

SAND MIXERS, CUTTERS AND SIFTERS
American Foundry Equipment Co., 407 Byrkit Ave., Mishawaka, Ind.
Beardsley & Piper Co., 2541 N. Keeler Ave., Chicago, Ill.
Blystone Mfg. Co., Ironton St., Cambridge Springs, Pa.
National Engineering Co., 549 W. Washington Blvd., Chicago, Ill.

SAND MIXERS (Core and Facing Sand)
National Engineering Co., 549 W. Washington Blvd., Chicago, Ill.

SAND RAMMERS
Beardsley & Piper Co., 2541 N. Keeler Ave., Chicago, Ill.

SAND RECLAIMERS
Beardsley & Piper Co., 2541 N. Keeler Ave., Chicago, Ill.

SAND SLINGERS
Beardsley & Piper Co., 2541 N. Keeler Ave., Chicago, Ill.

SASH PAINT
Skybryte Co., The, Keith Bldg., Cleveland, O.

SASH (Steel Casement)
Truscon Steel Co., Youngstown, O.

SAW SHARPENING MACHINES
Hunter Saw & Machine Co., 5656 Butler St., Pittsburgh, Pa.

SAWS (Cold and Hot Metal)
Hunter Saw & Machine Co., 5656 Butler St., Pittsburgh, Pa.
Mackintosh-Hemphill Co., Pittsburgh, Pa.
United Engineering & Foundry Co., Farmers Bank Bldg., Pittsburgh, Pa.

SAWS (High Speed Friction)
Ryerson, Jos. T., & Son, Inc., 16 and Rockwell Sts., Chicago, Ill.

SCALES, AUTOMATIC DIAL (Heavy Duty, Bench, Overhead Track, Tank, Hanging, Packing, Counting, Special Purposes)
American Kron Scale Co., 430 E. 53rd St., New York City.
Fairbanks Company, Broome & LaFayette Sts., New York City.
Fairbanks, Morse Co., Inc., 900 S. Wabash Ave., Chicago, Ill.
Toledo Scale Co., Monroe & Albion Sts., Toledo, O.

SCALES (Dial)
American Kron Scale Co., 430 E. 53rd St., New York City.
Fairbanks Company, Broome & LaFayette Sts., New York City.
Fairbanks, Morse & Co., 900 So. Wabash Ave., Chicago, Ill.

SCALES (Industrial, Motor Truck, Railroad Track, Rolling Mill)
American Kron Scale Co., 430 E. 53rd St., New York City.
Fairbanks Company, Broome & LaFayette Sts., New York City.
Fairbanks, Morse & Co., Inc., 900 S. Wabash Ave., Chicago, Ill.

SCLEROSCOPES, HARDNESS MEASURING
Shore Instrument & Mfg. Co., Van Wyck Ave. & Carll St., Jamaica, N. Y.

SCRAP BALING PRESSES
Logemann Bros., Co., 3126 Burleigh St., Milwaukee, Wis.

SCRAP BUNDLING MACHINES (Wire Mills)
Vaughn Machinery Co., The, Cuyahoga Falls, O.

SCREENS
Chicago Perforating Co., 2445 W. 24th Place, Chicago, Ill.
Harrington & King Perforating Co., The, 5634 Fillmore St., Chicago, Ill.
Hendrick Mfg. Co., 43 Dundaff St., Carbondale, Pa.
Standard Stamping & Perforating Co., 4720-22 W. 5th Ave., Chicago, Ill.

SCREENS AND SIEVES
Erdle Perforating Co., 171 York St., Rochester, N. Y.
Mundt, Chas., & Sons, Johnston and Fairmont Aves., Jersey City, N. J.

SCREW MACHINE PRODUCTS
Link-Belt Co., P. O. Box 85, Indianapolis, Ind.
Milford Mfg. Co., The, 33 Buckingham Ave., Milford, Conn.
Morganmade, Keene, N. H.
Wellman Products Co., The, 1448 E. 49th St., Cleveland, Ohio.

SCREW STOCK (Cold Drawn)
Union Drawn Steel Co., Beaver Falls, Pa.

SCREW STOCK (Free Cutting)
Union Drawn Steel Co., Beaver Falls, Pa.
Wyckoff Drawn Steel Co., Pittsburgh, Pa.

SCREWS
Clark Bros. Bolt Co., Milldale, Conn.
Muncie Cap & Set Screw Co., Muncie, Ind.
Progressive Mfg. Co., Torrington, Conn.

SCREWS (Cap and Heat Treated)
Rhode Island Tool Co., Providence, R. I.

SCREWS (Cap and Set)
Allen Mfg. Co., Hartford. Conn.

SCREWS (Cold Headed)
Muncie Cap & Set Screw Co., Muncie, Ind.

SEAMERS (Automatic, Double)
Ams, Max, Machine Co., 101 Park Ave., New York City.

SEAMLESS STEEL TUBING—See TUBES (Cold Drawn Seamless Steel)

SEATS (Copper Valve)
Lawrenceville Bronze Co., 518 Bessemer Bldg., Pittsburgh, Pa.

SEPARATORS (Magnetic)
Electric Controller & Mfg. Co., 2700 E. 79th St., Cleveland, O.

SHAFT AND PIPE STRAIGHTENERS (Hydraulic)
Logemann Brothers Co., 3126 Burleigh St., Milwaukee, Wis.

SHAFT HANGERS
Hyatt Roller Bearing Co., Newark, N. J.
Timken Roller Bearing Co., The, Canton, O.

SHAFTING
Bethlehem Steel Co., Bethlehem, Pa.
Bliss & Laughlin, Inc., Harvey, Ill.
National Tube Co., Frick Bldg., Pittsburgh, Pa.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.
Vanadium Corp. of America, 120 Broadway, New York City.
Wyckoff Drawn Steel Co., Pittsburgh, Pa.

SHAFTING (Cold Drawn)
Union Drawn Steel Co., Beaver Falls, Pa.

SHAFTING (Cold Drawn and Turned)
Bethlehem Steel Co., Bethlehem, Pa.

SHAFTING (Turned and Polished)
Union Drawn Steel Co., Beaver Falls, Pa.

SHAPERS—See PLANERS AND SHAPERS

SHAPES (Steel) — See STEEL (Structural)

SHEAR BLADES AND KNIVES
Heppenstall Forge & Knife Co., Arsenal Station, Pittsburgh, Pa.
Marchant, George F., Co., 1434 S. Rockwell St., Chicago, Ill.

SHEARS
Beatty Machine & Mfg. Co., Hammond, Ind.
Bliss, E. W., Co., 53rd St. and 2nd Ave., Brooklyn, N. Y.
Cleveland Punch & Shear Works Co., The, 3917 St. Clair Ave., Cleveland, Ohio.
Lewis Foundry & Machine Co., Farmers Bank Bldg., Pittsburgh, Pa.
Mackintosh-Hemphill Co., Pittsburgh, Pa.
Morgan Engineering Co., The, Alliance, O.
National Roll & Foundry Co., Avonmore, Pa.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.
Toledo Machine & Tool Co., Toledo, O.
United Engineering & Foundry Co., Farmers Bank Bldg., Pittsburgh, Pa.

SHEARS (Doubling and Squaring)
Streine Tool & Mfg. Co., The, New Bremen, Ohio.

SHEARS (Metal Slitting)
Streine Tool & Mfg. Co., The, New Bremen, Ohio.

SHEARS (Plate)
Streine Tool & Mfg. Co., The, New Bremen, Ohio.

SHEET BARS
Andrews Steel Co., Newsport, Ky.
Bethlehem Steel Co., Bethlehem, Pa.
Mansfield Sheet & Tin Plate Co., The, Mansfield, Ohio.
Wheeling Steel Corp., Wheeling, W. Va.

SHEET METAL PRODUCTS—See STAMPINGS

SHEET METAL STRAIGHTENERS
Shuster, The F. B., Co., New Haven, Conn.

SHEET METAL WORK
Crosby Co., The, 183 Pratt St., Buffalo, N. Y.

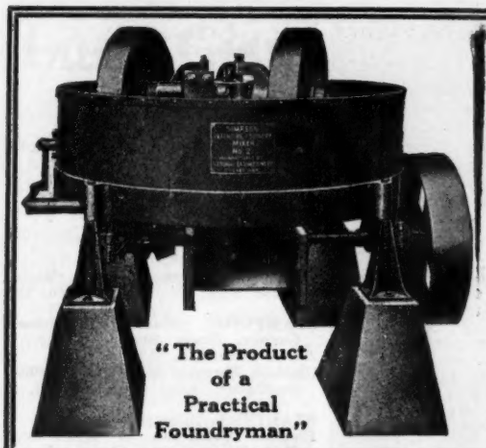
SHEET METAL WORKING MACHINERY
Ams, Max, Machine Co., 101 Park Ave., New York City.
Bliss, E. W., Co., 53rd St. and 2nd Ave., Brooklyn, N. Y.
Cleveland Punch & Shear Works Co., Inc., 3917 St. Clair Ave., Cleveland, Ohio.
Streine Tool & Mfg. Co., The, New Bremen, Ohio.
Toledo Machine & Tool Co., Toledo, Ohio.

SHEET MILLS
Lewis Foundry & Machine Co., Farmers Bank Bldg., Pittsburgh, Pa.

SHEETS
American Rolling Mill Co., Middletown, O.
American Sheet & Tin Plate Co., Frick Bldg., Pittsburgh, Pa.
Apollo Steel Co., Apollo, Pa.
Bethlehem Steel Co., Bethlehem, Pa.
Central Steel Co., Massillon, O.
Columbia Steel Corp., Balfour Building, San Francisco, Calif.
Granite City Steel Works, The, Granite City, Ill.
Inland Steel Co., First National Bank Bldg., Chicago, Ill.
Mansfield Sheet & Tin Plate Co., The, Mansfield, Ohio.
Morris & Bailey Division, Oliver Iron & Steel Corp., Wilson Station, Pittsburgh, Pa.
National Enameling & Stamping Co., Granite City, Ill.
Newport Rolling Mill Co., Newport, Ky.
Republic Iron & Steel Co., Youngstown, O.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.
Seneca Iron & Steel Co., Buffalo, N. Y.
Sheet Steel Trade Extension Committee, 715 Oliver Bldg., Pittsburgh, Pa.
Trumbull Steel Co., The, Warren, Ohio.
Wheeling Steel Corp., Wheeling, W. Va.

SHEETS (Acid Resistant)
Alcumite Corp., The, Dayton, O.

See Index to Advertisements for Pages Containing Advertisements of Companies Listed Above



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Eastern Sales Office, 17 John St. New York City

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618 Chamber-Commerce Bldg., Boston, Mass.

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Pittsburgh Wood Preserving Co., Adelaide, Pa.; Ohio Wood Preserving Co., Orrville, Ohio; Michigan Wood Preserving Co., Reed City, Mich.; New England Wood Preserving Co., Nashua, N. H.

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Allegheny Steel Co., Brackenridge, Pa.
American Rolling Mill Co., Middletown, Ohio.
American Sheet & Tin Plate Co., Frick Bldg., Pittsburgh, Pa.
Central Steel Co., Massillon, O.
Mansfield Sheet & Tin Plate Co., The, Mansfield, O.
Newton Steel Co., Youngstown, O.
Seneca Iron & Steel Co., Buffalo, N. Y.

SHEETS (Black)
Allegheny Steel Co., Brackenridge, Pa.
American Sheet & Tin Plate Co., Frick Bldg., Pittsburgh, Pa.
Apollo Steel Co., Apollo, Pa.
Bethlehem Steel Co., Bethlehem, Pa.
Granite City Steel Works, The, Granite City, Ill.
Mansfield Sheet & Tin Plate Co., The, Mansfield, Ohio.
Morris, Wheeler & Co., 30th and Locust Sts., Philadelphia, Pa.
National Enameling & Stamping Co., Granite City, Ill.
Newport Rolling Mill Co., Newport, Ky.
Newton Steel Co., Youngstown, O.
Republic Iron & Steel Co., Youngstown, O.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.
Seneca Iron & Steel Co., Buffalo, N. Y.
Weirton Steel Co., Weirton, W. Va.
Youngstown Sheet & Tube Co., Youngstown, O.

SHEETS (Blue Annealed)
Allegheny Steel Co., Brackenridge, Pa.
American Rolling Mill Co., Middletown, Ohio.
American Sheet & Tin Plate Co., Frick Bldg., Pittsburgh, Pa.
Apollo Steel Co., Apollo, Pa.
Bethlehem Steel Co., Bethlehem, Pa.
Central Steel Co., Massillon, O.
Granite City Steel Works, The, Granite City, Ill.
Mansfield Sheet & Tin Plate Co., The, Mansfield, Ohio.
Morris, Wheeler & Co., 30th and Locust Sts., Philadelphia, Pa.
National Enameling & Stamping Co., Granite City, Ill.
Newport Rolling Mill Co., Newport, Ky.
Newton Steel Co., Youngstown, O.
Republic Iron & Steel Co., Youngstown, O.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.
Sharon Steel Hoop Co., Sharon, Pa.
Tennessee Coal, Iron & Railroad Co., 1351 Brown-Marx Bldg., Birmingham, Ala.
Trumbull Steel Co., The, Warren, Ohio.
Wood, Alan, Iron & Steel Co., Widener Bldg., Philadelphia, Pa.

SHEETS (Box Annealed)
Sharon Steel Hoop Co., Sharon, Pa.

SHEETS (Brass, Bronze, Copper and Nickel Silver)
American Brass Co., 25 Broadway, New York City.

SHEETS (Cold Rolled)
Newton Steel Co., Youngstown, O.

SHEETS (Corrugated)
American Sheet & Tin Plate Co., Frick Bldg., Pittsburgh, Pa.
Apollo Steel Co., Apollo, Pa.
Bethlehem Steel Co., Bethlehem, Pa.
Weirton Steel Co., Weirton, W. Va.

SHEETS (Deep Stamping)
Allegheny Steel Co., Brackenridge, Pa.
Newton Steel Co., Youngstown, O.

SHEETS (Electrical)
Allegheny Steel Co., Brackenridge, Pa.
American Rolling Mill Co., Middletown, O.
American Sheet & Tin Plate Co., Frick Bldg., Pittsburgh, Pa.
Central Steel Co., Massillon, O.
Mansfield Sheet & Tin Plate Co., The, Mansfield, O.
Trumbull Steel Co., The, Warren, O.
Wheeling Steel Corp., Wheeling, W. Va.

SHEETS (Galvanized)
American Rolling Mill Co., Middletown, O.
American Sheet & Tin Plate Co., Frick Bldg., Pittsburgh, Pa.
Apollo Steel Co. Apollo, Pa.
Bethlehem Steel Co., Bethlehem, Pa.
Granite City Steel Works, The, Granite City, Ill.
Morris, Wheeler & Co., 30th & Locust Sts., Philadelphia, Pa.
National Enameling & Stamping Co., Granite City, Ill.
Republic Iron & Steel Co., Youngstown, O.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.
Trumbull Steel Co., The, Warren, Ohio.
Weirton Steel Co., Weirton, W. Va.
Wheeling Steel Corp., Wheeling, W. Va.
Youngstown Sheet & Tube Co., Youngstown, Ohio.

SHEETS (Perforated)
Erdle Perforating Co., 171 York St., Rochester, N. Y.

SHEETS (Pickled)
Newton Steel Co., Youngstown, O.

SHEETS (Roofing)—See ROOFING AND SIDING

SHEET (Tin)—See TIN PLATE

SHELVING (Steel)
Cleveland Wire Spring Co., The, 1281 E. 38th St., Cleveland, O.

SHIPBUILDING SHAPES
Bethlehem Steel Co., Bethlehem, Pa.

SHOVELS (Power)
Marion Steam Shovel Co., The, Marion, Ohio.

SIEVES
Hendrick Mfg. Co., 43 Dundaff St., Carbondale, Pa.

SLABS
Andrews Steel Co., Newport, Ky.
Donner Steel Co., Inc., P. O. Box 1000, Buffalo, N. Y.
Mansfield Sheet & Tin Plate Co., The, Mansfield, Ohio.
Wheeling Steel Corp., Wheeling, W. Va.

SLEEVES AND NOZZLES
Tempest Brick Co., Ltd., The, House Bldg., Pittsburgh, Pa.

SLITTING MACHINERY
Blake & Johnson Co., The, 185 N. Elm St., Waterbury, Conn.

SOAKING PITS
Chapman-Stein Furnace Co., Mt. Vernon, O.

SPACING TABLES
Thomas Spacing Machine Co., Fulton Bldg., Pittsburgh, Pa.

SPECIAL MACHINERY
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Bethlehem Steel Co., Bethlehem, Pa.
Bliss, E. W., Co., 53rd and 2nd Ave., Brooklyn, N. Y.
Lammert & Mann Co., Chicago, Ill.
Morgan Engineering Co., The, Alliance, O.
National Roll & Foundry Co., Avonmore, Pa.
Pennsylvania Engineering Works, New Castle, Pa.
Smith Gas Engineering Co., Dayton, Ohio.
Sutton-Abramsen Engineering Co., Park Bldg., Pittsburgh, Pa.
Tioga Steel & Iron Co., 52nd & Grays Ave., Philadelphia, Pa.
Treadwell Engineering Co., Easton, Pa.
Wellman-Seaver-Morgan Co., 7025 Central Ave., Cleveland, O.
Wheeling Mold & Foundry Co., Wheeling, W. Va.

SPECIAL SHAPES
Sharon Steel Hoop Co., Sharon, Pa.

SPECIAL SHAPES (Cold Drawn)
Union Drawn Steel Co., Beaver Falls, Pa.

SPEED REDUCERS
Jones, W. A., Foundry & Machine Co., 4437 W. Roosevelt Rd., Chicago, Ill.
Shepard Electric Crane & Hoist Co., 358 Schuyler Ave., Montour Falls, N. Y.

SPEED REDUCERS (Worm & Spur)
Albaugh-Dover Mfg. Co., 2154 Marshall Blvd., Chicago, Ill.
Ganschow, Wm., Co., 24 N. Morgan St., Chicago, Ill.
James, D. O., Mfg. Co., 1120 W. Monroe St., Chicago, Ill.
Philadelphia Gear Works, E. Tioga, Philadelphia, Pa.

SPIEGELEISEN
Leavitt, C. W., & Co., 30 Church St., New York City.
Rogers, Brown & Crocker Bros., Inc., 21 E. 40th St., New York City.
Samuel, Frank & Co., Harrison Bldg., Philadelphia, Pa.

SPIKES
Bethlehem Steel Co., Bethlehem, Pa.
Illinois Steel Co. 208 So. La Salle St., Chicago, Ill.

SPRING MAKING MACHINERY
Sleeper & Hartley, Inc., Worcester, Mass.

SPRINGS
American Spiral Spring & Mfg. Co., Arsenal Station, Pittsburgh, Pa.
American Spring & Mfg. Co., Elm St., Holly, Mich.
American Steel & Wire Co., 208 S. LaSalle St., Chicago, Ill.
Barnes-Gibson-Raymond, Inc., 6400 Miller Ave., Detroit, Mich.
Cleveland Wire Spring Co., The, 1281 E. 38th St., Cleveland, O.
Cook Spring Co., Ann Arbor, Mich.
Duer Spring & Mfg. Co., Pittsburgh, Pa.
Fort Pitt Spring & Mfg. Co., McKees Rocks, Pa.
Raymond Mfg. Co., Centre St., Corry, Pa.

SPRINGS (Car)
American Spiral Spring & Mfg. Co., Arsenal Station, Pittsburgh, Pa.

SPRINGS (Coil & Elliptic)
American Spiral Spring & Mfg. Co., Arsenal Station, Pittsburgh, Pa.
Fort Pitt Spring & Mfg. Co., McKees Rocks, Pa.

SPRINGS (Coil and Flat)
American Spiral Spring & Mfg Co., Arsenal Station, Pittsburgh, Pa.
American Spring & Mfg. Co., Elm St., Holly, Mich.
Barnes-Gibson-Raymond, Inc., 4200 Miller Ave., Detroit, Mich.
Bethlehem Steel Co., Bethlehem, Pa.
Cleveland Wire Spring Co., The, 1281 E. 38th St., Cleveland, O.
Cook Spring Co., Ann Arbor, Mich.
Raymond Mfg. Co., Centre St., Corry, Pa.

SPRUE CUTTERS
Hanna Engineering Works, 1765 Elston Ave., Chicago, Ill.
Shuster, The F. B., Co., New Haven, Conn.

STACKS (Steel)
American Bridge Co., The, 71 Broadway, New York City.
Hendrick Mfg. Co., 43 Dundaff St., Carbondale, Pa.,
Morgan Engineering Co., The, Alliance, Ohio.
Sotter Bros., Inc., Pottstown, Pa.
Truscon Steel Co., Youngstown, O.

STAMPINGS
American Spring & Mfg. Co., Elm St., Holly, Mich.
American Tube & Stamping Co., The, Bridgeport, Conn.
Bliss, E. W., Co., 53rd St. and 2nd Ave., Brooklyn, N. Y.
Breese Bros. Co., The, 2347 Reading Rd., Cincinnati, Ohio.
Central Iron & Steel Co., Harrisburg, Pa.
Crosby Co., The, 183 Pratt St., Buffalo, N. Y.
G G G Metal Stamping Co., Dept. D., Warren, Pa.
Gray, Peter, & Sons Co., Cambridge, Mass.
Joliet Wrought Washer Co., Joliet, Ill.
Lansing Stamping Co., Lansing, Mich.
Motor Wheel Corp., Lansing, Mich.
Truscon Steel Co., Youngstown, O.

STAMPINGS (Aluminum, Bronze, Copper, Brass, Steel)
Akron-Selle Co., Akron, Ohio.
Chicago Forging & Mfg. Co., 2004 Southport Ave., Chicago, Ill.

STARTERS (Electric Motor)
Electric Controller & Mfg. Co., 2700 E. 79th St., Cleveland, O.

STEAMSHIP COMPANIES
Cleveland & Buffalo Transit Co., E. 9th St., Cleveland, Ohio.

STEEL
Andrews Steel Co., Newport, Ky.
Bethlehem Steel Co., Bethlehem, Pa.
Carnegie Steel Co., 431 Carnegie Bldg., Pittsburgh, Pa.
Central Steel Co., The, Massillon, Ohio.
Gulf States Steel Co., Birmingham, Ala.
Illinois Steel Co., 208 So. La Salle St., Chicago, Ill.
Illinois Steel Warehouse Co., 1319 Wabansia Ave., Chicago, Ill.
Interstate Iron & Steel Co., 104 S. Michigan Ave., Chicago, Ill.
Jones & Laughlin Steel Corp., Pittsburgh, Pa.
Kidd Drawn Steel Co., Aliquippa, Pa.
Pacific Coast Steel Co., Rialto Bldg., San Francisco, Cal.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.
Superior Steel Corp., Union Trust Bldg., Pittsburgh, Pa.
West Leechburg Steel Co., Farmers Bank Bldg., Pittsburgh, Pa.
Wyckoff Drawn Steel Co., Pittsburgh, Pa.

STEEL (Agricultural)
Bethlehem Steel Co., Bethlehem, Pa.

STEEL (Alloy)
Andrews Steel Co., Newport, Ky.
Bethlehem Steel Co., Bethlehem, Pa.
Central Steel Co., Massillon, Ohio.
Donner Steel Co., Inc., P. O. Box 1000, Buffalo, N. Y.
Firth-Sterling Steel Co., McKeesport, Pa.
Hawkridge Bros., 303 Congress St., Boston, Mass.
Interstate Iron & Steel Co., 104 S. Michigan Ave., Chicago, Ill.
Ludlum Steel Co., Watervliet, N. Y.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.
Timken Roller Bearing Co., The, Canton, O.
Vanadium Corp. of America, 120 Broadway, New York City.
Wheelock, Lovejoy & Co., 128 Sidney St., Cambridge, Mass.

STEEL (Alloy, Cold Drawn)
Timken Roller Bearing Co., The, Canton, O.
Union Drawn Steel Co., Beaver Falls, Pa.

STEEL (Cold Drawn)
Bethlehem Steel Co., Bethlehem, Pa.
Bliss & Laughlin, Inc., Harvey, Ill.
Hawkridge Bros., 303 Congress St., Boston, Mass.
Kidd Drawn Steel Co., Aliquippa, Pa.
Moltrup Steel Products Co., Beaver Falls, Pa.
Pittsburgh Tool Steel Wire Co., Monaca, Pa.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.

See Index to Advertisements for Pages Containing Advertisements of Companies Listed Above

Little Giant Air Drills

Little Giant Air Drills are made in a size and type for every operation that can be performed with air drills.

Little Giants save time and labor on such jobs as nut tightening, running in staybolts, setting studs, cutting out boiler tubes and driving boring bars as well as on drilling, tapping, reaming and flue-rolling.

May we send you full information?

Little Giant Air Drill tightening nuts on car platform.

Chicago Pneumatic Tool Company

Chicago Pneumatic Building, 6 East 44th St., New York

*Sales and *Service Branches all over the World*

*Birmingham *Boston Buffalo *Chicago *Cincinnati *Cleveland Dallas Denver *Detroit El Paso Houston Knoxville *Los Angeles *Minneapolis *New Orleans *New York *Philadelphia *Pittsburgh Richmond *San Francisco *Seattle *St. Louis Tulsa Salt Lake City

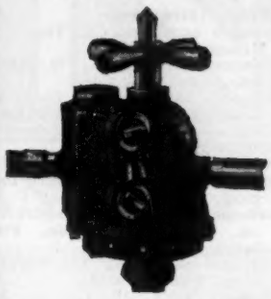
P-283-S

CHICAGO PNEUMATIC AIR COMPRESSORS · ROTER PNEUMATIC HAMMERS · ROCK AND COAL DRILLS · CONDENSERS · LITTLE GIANT PNEUMATIC AND ELECTRIC TOOLS · GIANT OIL AND GAS ENGINES · VACUUM PUMPS · OIL BURNERS · PAINT SPRAYERS · TOOL BALANCERS · PNEUMATIC HOISTS · SAND BLASTING

CHICAGO PNEUMATIC

CHICAGO *Depend Upon* PNEUMATIC *That Name*

CLECO AIR DRILLS



Every Revolving Part is mounted upon Ball Bearings.
Made in 35 Styles and Sizes. Plain and Compound Geared. Reversible and Non Reversible.

Has 33 1/3 per cent fewer parts than any similar Four-Piston Air Drill

We Manufacture Cleveland

CHIPPING AND RIVETING HAMMERS, SAND RAMMERS, CORNER DRILLS, EMERY GRINDERS, ETC.

Bowes' Automatic Air Hose Couplings and Cleco Pressure-Seated Air Valves

Are Standard Equipment Everywhere

AIR TIGHT

Above cut shows application of Never-Slip Hose Clamp to Bowes' Couplings. We guarantee that no "Blow-offs" can occur if Cleco Never-Slip Clamps are used.

WRITE FOR BULLETINS Nos. 52 and 81 D

OFFICES IN ALL LARGE CITIES

THE CLEVELAND PNEUMATIC TOOL CO.

CLEVELAND, O., U. S. A.

Agents British Isles, John MacDonald & Co., Pollokshaws, Glasgow, Scotland.

Whitney Metal Tool Company

BALL BEARING PUNCHES & SHEARS

ROCKFORD, ILLINOIS, U. S. A. *Write us—Or ask your Dealer*

Hydraulic Machinery
Automatic Gas Producers

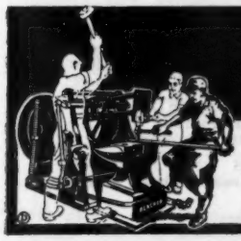
R. D. WOOD & CO.
ESTABLISHED 1803
PHILADELPHIA, PA.

Catalogues mailed upon request

PORTAGE SANDS

MOLDING OVER 98% SILICA SANDBLASTING

THE PORTAGE SILICA CO., YOUNGSTOWN, OHIO.



BLACKER HAMMERS

"Now the Hand Anvil —is Worked by Machine!"

Write for our folder on Modern Blacksmithing.

BLACKER ENGINEERING CO.
72 East 45 St. New York.

DEEMER STEEL CASTING CO.

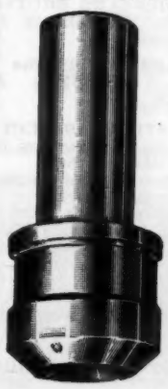
9th and WASHINGTON AVE.
NEW CASTLE, DELAWARE

Dependable Castings Shipped Promptly

1—2000 pounds, in any quantity.

12 Years of Satisfactory Service

covering all classes of riveting is behind our



"VANADIUM" AIR HAMMER RIVET SETS

Our success is due to the policy of manufacturing only on the *quality basis*. An unusually high grade of alloy steel is combined with long experience and careful workmanship. Shipped on approval.

GEO. F. MARCHANT COMPANY

1434 So. Rockwell St., CHICAGO.

Superior Steel Products Co., Monaca, Pa.
Union Drawn Steel Co., Beaver Falls, Pa.
Wyckoff Drawn Steel Co., Pittsburgh, Pa.

STEEL (Crucible)
Columbia Tool Steel Co., Chicago Heights, Ill.
Firth-Sterling Steel Co., McKeesport, Pa.
Hawkridge Bros., 303 Congress St., Boston, Mass.

STEEL (Drill)
Stulz-Sickles Co., 121 Lafayette St., Newark, N. J.

STEEL (Electric)
Ludlum Steel Co., Watervliet, N. Y.

STEEL (High Speed)
Allen, Edgar, Steel Co., Inc., 718-722 W. Lake St., Chicago, Ill.
Columbia Tool Steel Co., Chicago Heights, Ill.
Firth-Sterling Steel Co., McKeesport, Pa.
Latrobe Electric Steel Co., Latrobe, Pa.
Vanadium Alloys Steel Co., Latrobe Pa.
Wheelock, Lovejoy & Co., Inc., 128 Sidney St., Cambridge, Mass.

STEEL (Oil Hardening)
Columbia Tool Steel Co., Chicago Heights, Ill.

STEEL (Open Hearth)
Central Steel Co., Massillon, Ohio.
Gulf States Steel Co., Brown-Marx Bldg., Birmingham, Ala.
Washburn Wire Co., Phillipsdale, R. I.

STEEL (Open-hearth—Cold Drawn)
Union Drawn Steel Co., Beaver Falls, Pa.

STEEL (Rustless)
Firth-Sterling Steel Co., McKeesport, Pa.
Ludlum Steel Co., Watervliet, N. Y.

STEEL (Screw Stock)
Superior Steel Products Co., Monaca, Pa.

STEEL (Spring)
Bethlehem Steel Co., Bethlehem, Pa.
Central Steel Co., Massillon, Ohio.
Donner Steel Co., Inc., P. O. Box 1000, Buffalo, N. Y.
Vanadium Corp. of America, 120 Broadway, New York City.

STEEL (Stainless)
Allegheny Steel Co., Brackenridge, Pa.
Firth-Sterling-Steel Co., McKeesport, Pa.

STEEL (Stamping and Drawing)
Columbia Steel Co., Standard Life Bldg., Pittsburgh, Pa.
Griffin Mfg. Co., 15th and Cherry Sts., Erie, Pa.
Superior Steel Corp., Union Trust Bldg., Pittsburgh, Pa.

STEEL (Strip, Hot and Cold Rolled)
Acme Steel Co., 2840 Archer Ave., Chicago, Ill.
American Tube & Stamping Co., The, Bridgeport, Conn.
Central Steel Co., Massillon, Ohio.
Columbia Steel Co., Standard Life Bldg., Pittsburgh, Pa.
Elliott-Blair Steel Co., New Castle, Pa.
Griffin Mfg. Co., 15th and Cherry Sts., Erie, Pa.
Laclede Steel Co., Arcade Bldg., St. Louis, Mo.
Morris & Bailey Division, Oliver Iron & Steel Corp., Wilson Station, Pittsburgh, Pa.
Pittsburgh Cold Rolled Steel Co., Verona, Pa.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.
Superior Steel Corp., Union Trust Bldg., Pittsburgh, Pa.
Trumbull Steel Co., The, Warren, Ohio.
Weirton Steel Co., Weirton, W. Va.
West Leechburg Steel Co., Farmers Bank Bldg., Pittsburgh, Pa.

STEEL (Structural)
Alliance Structural Co., The, Alliance, O.
American Bridge Co., 71 Broadway, New York City.
Belmont Iron Works, 22nd and Washington Ave., Philadelphia, Pa.
Bethlehem Steel Co., Bethlehem, Pa.
Blaw-Knox Co., 602 Farmers Bank Bldg., Pittsburgh, Pa.
Bollinger-Andrews Construction Co., 1016 Empire Bldg., Pittsburgh, Pa.
Carnegie Steel Co., 431 Carnegie Bldg., Pittsburgh, Pa.
Eichleay, John, Jr., Co., So. 20th and Wharton, Pittsburgh, Pa.
Erie Steel Construction Co., The, Erie, Pa.
Illinois Steel Warehouse Co., 1319 Wabansia Ave., Chicago, Ill.
Kratzer W. N., Co., 3212 Smallman St., Pittsburgh, Pa.
McClintic-Marshall Co., Oliver Bldg., Pittsburgh, Pa.
Moss, J. E., Iron Works, Wheeling, W. Va.
Ohio Structural Steel Co., The, Newton Falls, O.
Pacific Coast Steel Co., Rialto Bldg., San Francisco, Cal.
Phillips, F. R., & Sons, Co., Pennsylvania Bldg., Philadelphia, Pa.
Phoenix Iron Co., The, 20 So. 15th St., Philadelphia, Pa.
Republic Iron & Steel Co., Youngstown, O.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.
Snead Architectural Iron Works, Louisville, Ky.
Tennessee Coal, Iron & Railroad Co., Brown-Marx Bldg., Birmingham, Ala.
Truscon Steel Co., Youngstown, O.
Wallace Equipment Co., 11th St., S. W. & Hanford, Seattle, Wash.

STEEL (Tool)
Bethlehem Steel Co., Bethlehem, Pa.
Columbia Tool Steel Co., Chicago Heights, Ill.
Firth-Sterling Steel Co., McKeesport, Pa.
Hawkridge Bros., 303 Congress St., Boston, Mass.
Kidd Drawn Steel Co., Aliquippa, Pa.
Latrobe Electric Steel Co., Latrobe, Pa.
Ludlum Steel Co., Watervliet, N. Y.
Midvale Co., The, Nicetown, Philadelphia, Pa.
Ryerson, Jos. T., & Son., Inc., 16th and Rockwell Sts., Chicago, Ill.
Stultz-Sickles Co., 121 LaFayette St., Newark, N. J.
Vanadium Alloys Steel Co., Latrobe, Pa.
Wheelock, Lovejoy & Co., Inc., 128 Sidney St., Cambridge, Mass.

STEEL BUILDINGS—See BRIDGES, BUILDINGS AND VIADUCTS

STEEL CARBON
Bethlehem Steel Co., Bethlehem, Pa.

STEEL DOORS AND SHUTTERS
Kinnear Mfg. Co., 818-868 Field Ave., Columbus, O.

STEEL FABRICATORS—See BRIDGES, BUILDINGS AND VIADUCTS

STEEL PLATE CONSTRUCTION
Blaw-Knox Co., 602 Farmers Bank Bldg., Pittsburgh, Pa.
Blystone Mfg. Co., Ironton St., Cambridge Springs, Pa.
Gerstner Boiler Works, 39th and Neville St., Pittsburgh, Pa.
Hammond Iron Works, Warren, Pa.
Hendrick Mfg. Co., 43 Dundaff St., Carbondale, Pa.
Pennsylvania Engineering Works, New Castle, Pa.
Petroleum Iron Works Co., Sharon, Pa.
Riter-Conley Co., Oliver Bldg., Pittsburgh, Pa.
Sotter Bros., Inc., Pottstown, Pa.
Steel Plate Products Co., Pottstown, Pa.

STEEL PLATES — See PLATES (Iron and Steel)

STEEL STAMPINGS—See STAMPINGS

STELLITE
Haynes Stellite Co., 30 E. 42nd St., New York City.

STEPS (Ladder and Stair, Non-slipping)
Hendrick Mfg. Co., 43 Dundaff St., Carbondale, Pa.
Irving Iron Works, Long Island City, N. Y.

STOCK LINE RECORDER (Electric)
Freyn Engineering Co., 310 S. Michigan Ave., Chicago, Ill.

STOKERS
Babcock & Wilcox Co., The, 85 Liberty St., New York City.
Combustion Engineering Corp., 43 Broad St., New York City.

STOOLS AND FACTORY EQUIPMENT (Steel)
Cleveland Wire Spring Co., The, 1281 E. 38th St., Cleveland, O.

STRAIGHTENING MACHINERY
Blake & Johnson Co., The, 185 N. Elm St., Waterbury, Conn.
Kane & Roach, Niagara and Shonnard Sts., Syracuse, N. Y.
Shuster, The F. B, Co., New Haven, Conn.
Sutton-Abramsen Engineering Co., Park Bldg., Pittsburgh, Pa.

STRAPPING (Leather)
Williams, I. B., & Sons, Dover, N. H.

STRIP MILLS (Hot or Cold)
Blake & Johnson Co., The, 185 N. Elm St., Waterbury, Conn.
Treadwell Engineering Co., Easton, Pa.

STRIP STEEL STRAIGHTENERS
Blake & Johnson Co., The, 185 N. Elm St., Waterbury, Conn.
Shuster, The F. B, & Co., New Haven, Conn.

STRIP (Steel and Cold Rolled)—See STEEL (Strip, Hot or Cold Rolled)

STRUCTURAL IRON AND STEEL WORK — See STEEL (Structural)

SUB-PRESSES — See PRESSES (Sub.)

SULPHURIC ACID
Cleveland-Cliffs Iron Co., Union Trust Bldg., Cleveland, O.

SWITCH STANDS
Bethlehem Steel Co., Bethlehem, Pa.

SWITCHES (Electric)
Electric Controller & Mfg. Co., 2700 E. 79th St., Cleveland, O.
Shepard Electric Crane & Hoist Co., 358 Schuyler Ave., Montour Falls, N. Y.

TANKS
Gerstner Boiler Works, 39th and Neville St., Pittsburgh, Pa.

TANKS (Acetylene)
National Tube Co., Frick Bldg., Pittsburgh, Pa.

TANKS (Storage, Pressure, Riveted, Welded)
Air Tight Steel Tank Co., Mansion and Gloster Sts., Pittsburgh, Pa.
Hammond Iron Works, Warren, Pa.
Pennsylvania Engineering Works, New Castle, Pa.
Petroleum Iron Works Co., Sharon, Pa.
Riter-Conley Co., Oliver Bldg., Pittsburgh, Pa.
Sotter Bros., Inc., Pottstown, Pa.
Steel Plate Products Co., Pottstown, Pa.

TANKS (Wooden, Acid and Pickling)
Kalamazoo Tank & Silo Co., 504 Harrison St., Kalamazoo, Mich.

TAPPING MACHINES
National Machinery Co., The, Tiffin, O.
Taylor-Wilson Mfg. Co., McKees Rocks, Pa.

TAPS AND DIES
Landis Machine Co., Waynesboro, Pa.

TERNE PLATE
American Steel & Tin Plate Co., Frick Bldg., Pittsburgh, Pa.
Weirton Steel Co., Weirton, W. Va.

TESTING MACHINES (Pipe)
Taylor-Wilson Mfg. Co., McKees Rocks, Pa.

THREAD CUTTING TOOLS
Landis Machine Co., Waynesboro, Pa.
Williams Tool Corp., W. 12th and Liberty, Erie, Pa.

THREADING MACHINERY
National Machinery Co., The, Tiffin, O.
Rickert-Shafer Co., Box 722, Erie, Pa.

TIE PLATES
Illinois Steel Co., 206 S. La Salle St., Chicago, Ill.

TIES (Creosoted)
Century Wood Preserving Co., 1053 Century Bldg., Pittsburgh, Pa.

TIN PLATE
American Sheet & Tin Plate Co., Frick Bldg., Pittsburgh, Pa.
Bethlehem Steel Co., Bethlehem, Pa.
Granite City Steel Works, The Granite City, Ill.
Mansfield Sheet & Tin Plate Co., Mansfield, O.
National Enameling & Stamping Co., Granite City, Ill.
Trumbull Steel Co., The, Warren, O.
Weirton Steel Co., Weirton, W. Va.

TIN PLATE MILL EQUIPMENT
Lewis Foundry & Machine Co., Farmers Bank Bldg., Pittsburgh, Pa.

TITANIUM
Titanium Alloy Mfg. Co., Niagara Falls, N. Y.

TOOL BITS (High Sneed)
Firth-Sterling Steel Co., McKeesport, Pa.

TOOL BITS (Stellite)
Haynes Stellite Co., 30 E. 42nd St., New York City.

TOOLS (Pneumatic)
Chicago Pneumatic Tool Co., 6 E. 44th St., New York City.
Cleveland Pneumatic Tool Co., 3734 E. 78th St., Cleveland, O.
Ingersoll-Rand Co, 11 Broadway, New York City.

TOOLS (Portable Electric)
Chicago Pneumatic Tool Co., 6 E. 44th St., New York City.

TORCHES AND BURNERS (Acetylene, Blow, Oxy-Acetylene)
Oxweld Acetylene Co., 30 E. 42nd St., New York City.

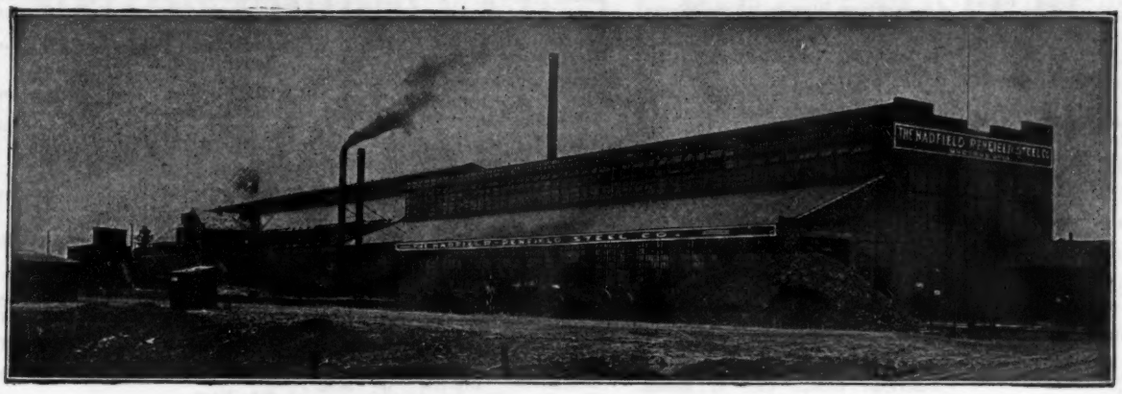
TORCHES AND BURNERS (Kerosene and Fuel Oil)
Hauck Mfg. Co., 114 Tenth St., Brooklyn, N. Y.

TOWERS (Transmission)
American Bridge Co., 71 Broadway, New York City.
Pacific Coast Steel Co., Rialto Bldg., San Francisco, Cal.

See Index to Advertisements for Pages Containing Advertisements of Companies Listed Above

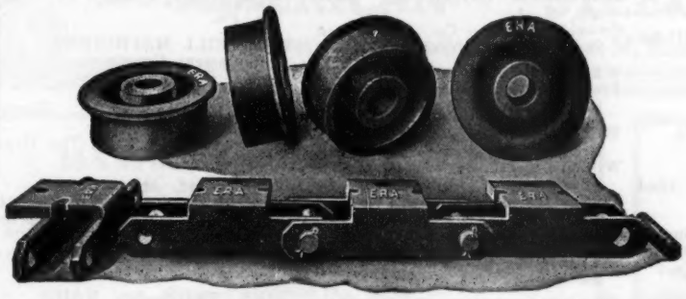
CASTINGS

WHERE "ERA" MANGANESE STEEL IS MADE



ERA

HADFIELDS'
"ERA" MANGANESE STEEL
BLAST FURNACE CASTINGS



Announcement

ERA Manganese Steel
Pig Castings Machine Parts
Wheels — Pins — Links

Render the Service required of them unusually *well* Because—the care and precision used in producing them is done equally well.—Manganese Steel Castings that *wear*.

THE ERA STEEL CO.
Bucyrus, Ohio

ACID OPEN-HEARTH

STRONG STEEL CASTINGS

ACID OPEN-HEARTH

Always connect above with

STRONG STEEL FOUNDRY CO.

10 Pounds to 15 Tons BUFFALO, N.Y.

WE MAKE ANY KIND OF OPEN HEARTH

STEEL CASTINGS

BUT ONLY ONE QUALITY—THE BEST

FEDERAL STEEL FOUNDRY CO.

Foot of Reaney St. CHESTER, PA.

ACID OPEN HEARTH

STEEL CASTINGS

—Exclusively

ATLAS STEEL CASTING COMPANY

General Offices and Works: BUFFALO, N. Y.

New York Office: 30 E. 42d St.

SERVICE SMALL—STEEL—CASTINGS

THE WEST STEEL CASTING CO.

CLEVELAND OHIO

"HE PROFITS MOST WHO SERVES BEST" QUALITY

UNION STEEL CASTING CO.

Pittsburgh, Pa.

ANNEALING BOXES AND BOTTOMS

General Rolling Mill Machinery Castings

TRACTORS
Ford Motor Co., Detroit, Mich.

TRAMRAIL SYSTEMS
Cleveland Electric Tramrail, Division of the Cleveland Crane and Engineering Co., Wickliffe, O.

TRAMRAILS
Harnischfeger Corp., 38th and National, Milwaukee, Wis.

TRANSFORMERS (Speed)
Ganschow Co., Wm., 24 N. Morgan St., Chicago, Ill.

THREADS (Nonslipping)
Hendrick Mfg. Co.,
43 Dundaff St., Carbondale, Pa.
Irving Iron Works, Long Island City, N. Y.

TREADS (Stair)
Hendrick Mfg. Co.,
43 Dundaff St., Carbondale, Pa.

TROLLEYS
Cleveland Electric Tramrail, Division of the Cleveland Crane & Engineering Co., Wickliffe, O.
Hanna Engineering Works, 1765 Elston Ave., Chicago, Ill.
Milwaukee Electric Crane & Mfg. Corp., Milwaukee, Wis.
Roeper Crane & Hoist Works, 1729 No. 10th St., Reading, Pa.
Shepard Electric Crane & Hoist Co., 358 Schuyler Ave., Montour Falls, N. Y.

TRUCKS (Elevating)
Baker Raulang Co., The, 2180 West 25th St., Cleveland, O.

TRUCKS (Motor)
Ford Motor Co., Detroit, Mich.

TRUCKS (Welding)
Oxweld Acetylene Co., 30 E. 42nd St., New York City.

TRUCKS AND TRACTORS (Electric Industrial)
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Baker Raulang Co., The, 2180 West 25th St., Cleveland, O.

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Treadwell Engineering Co., Easton, Pa.
United Engineering & Foundry Co., Farmers Bank Bldg., Pittsburgh, Pa.

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National Tube Co., Frick Bldg., Pittsburgh, Pa.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.
S. F. Steel Products Co., Call Bldg., San Francisco, Calif.
Timken Roller Bearing Co., The, Canton, O.
Tyler Tube & Pipe Co., The, Washington, Pa.

TUBES (Boiler)
Babcock & Wilcox Tube Co., Beaver Falls, Pa.
Bethlehem Steel Co., Bethlehm, Pa.
Keating, E. F., Co., 446-54 Water St., New York City.
Morris, Wheeler & Co., 30th and Locust Sts., Philadelphia, Pa.
National Tube Co., Frick Bldg., Pittsburgh, Pa.
Ryerson, Jos. T., & Son, Inc., 16th & Rockwell Sts., Chicago, Ill.
Tyler Tube & Pipe Co., Washington, Pa.
Williams & Co., Inc., 915-937 Pennsylvania Ave., Pittsburgh, Pa.

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Tyler Tube & Pipe Co., The, Washington, Pa.

TUBES (Cold Drawn Seamless Steel)
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National Tube Co., Frick Bldg., Pittsburgh, Pa.
Summerill Tubing Co., Bridgeport, Pa.
Timken Roller Bearing Co., The, Canton, O.
Williams & Co., Inc., 915-937 Pennsylvania Ave., Pittsburgh, Pa.

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Bethlehem Steel Co., Bethlehem, Pa.
National Tube Co., Frick Bldg., Pittsburgh, Pa.
Tyler Tube & Pipe Co., The, Washington, Pa.

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General Electric Co., Schenectady, N. Y.
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

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TURNBUCKLES
Merrill Brothers, Maspeth, N. Y.

TURNTABLES
American Bridge Co., 71 Broadway, New York City.

TUYERES
Climax Fire Brick Co., Climax, Pa.
Keystone Bronze Co., 29th St., Pittsburgh, Pa.
Lawrenceville Bronze Co., 518 Bessemer Bldg., Pittsburgh, Pa.

TWIST DRILLS — See DRILLS

UNIONS (Pipe)
Dart, E. M., Mfg. Co., Providence, R. I.
Illinois Malleable Iron Co., 1801 Diversey Blvd., Chicago, Ill.

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VALVES (Blast Furnace, Copper)
Lawrenceville Bronze Co., 518 Bessemer Bldg., Pittsburgh, Pa.

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Duff Patents Co., Inc., 321 Union Trust Bldg., Pittsburgh, Pa.
McKee, Willis, 2422 Euclid Ave., Cleveland, O.
Morgan Construction Co., Worcester, Mass.

VALVES (Hydraulic)
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Wood, R. D., & Co., 400 Chestnut St., Philadelphia, Pa.

VALVES (Pneumatic)
Cleveland Pneumatic Tool Co., 3734 E. 78th St., Cleveland, O.

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Jenkins Brothers, 80 White St., New York Cty.
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Union Drawn Steel Co., Beaver Falls, Pa.

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Oliver Iron & Steel Corp., So. 10th and Muriel Sts., Pittsburgh, Pa.

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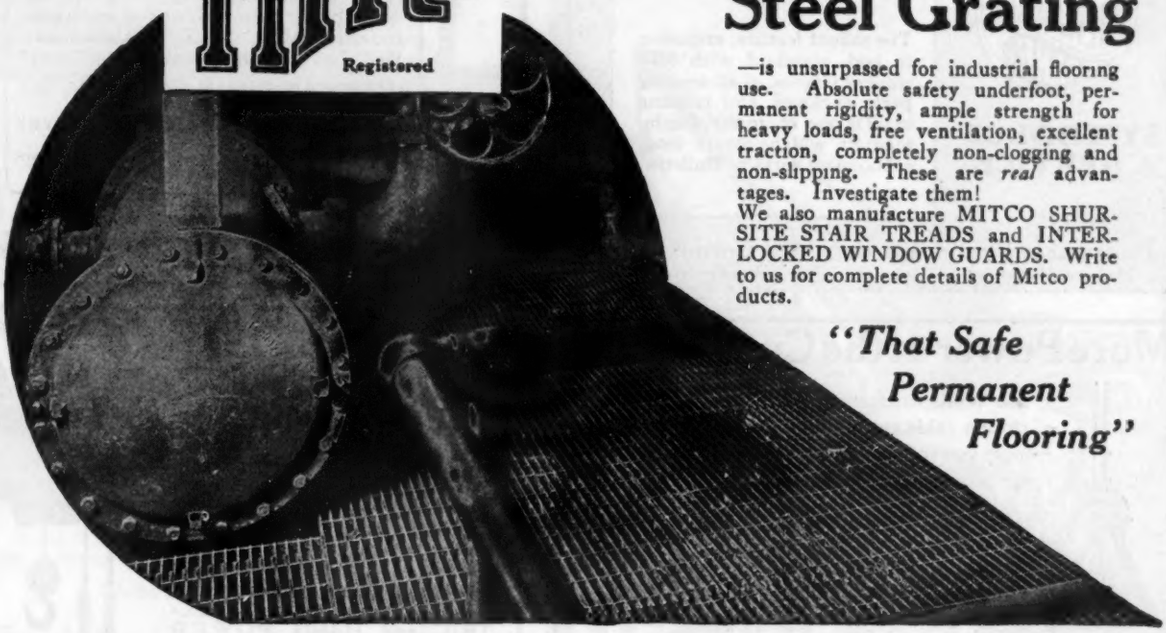

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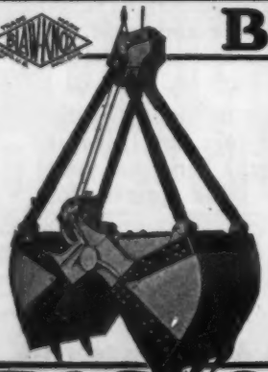

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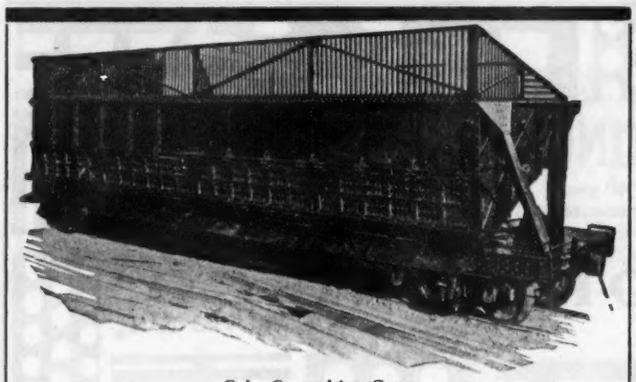

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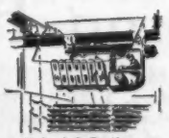

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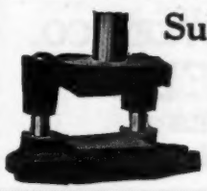

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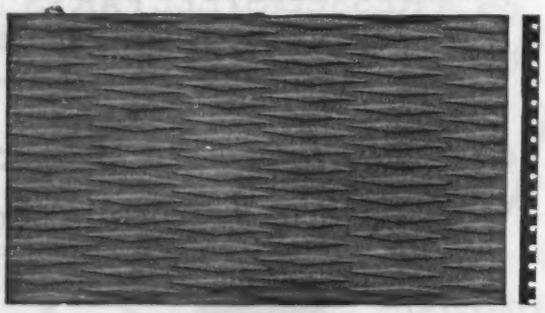

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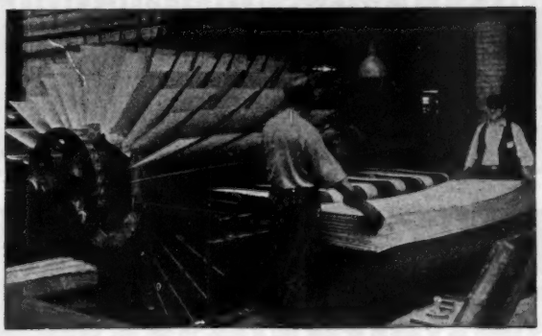

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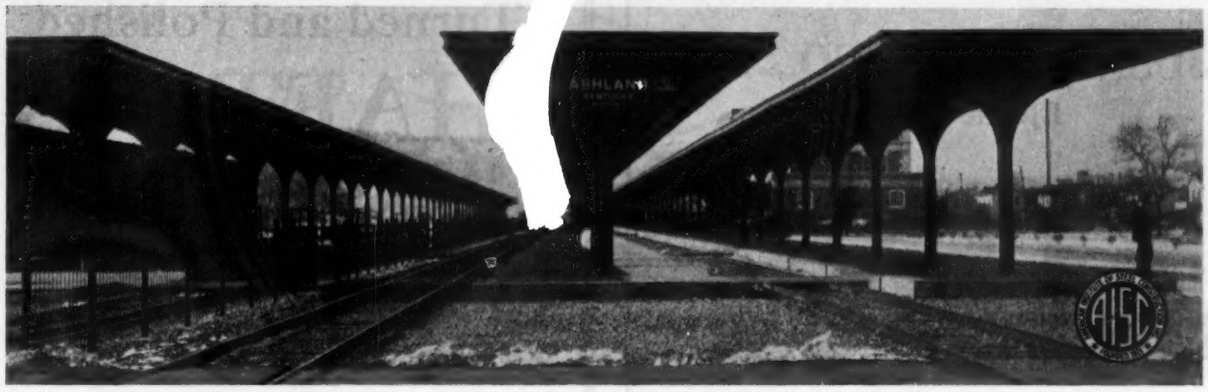

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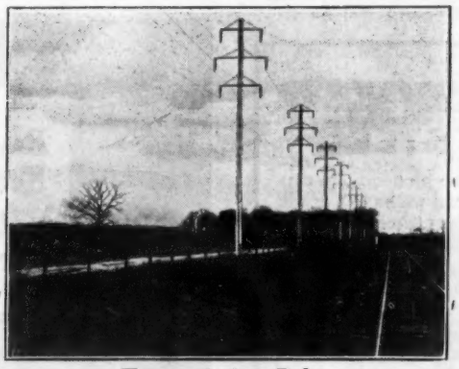

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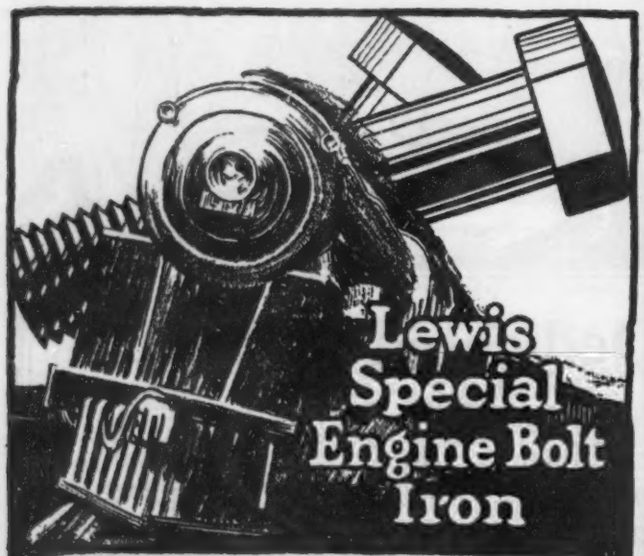

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"Iron Rigidity + Steel Strength."

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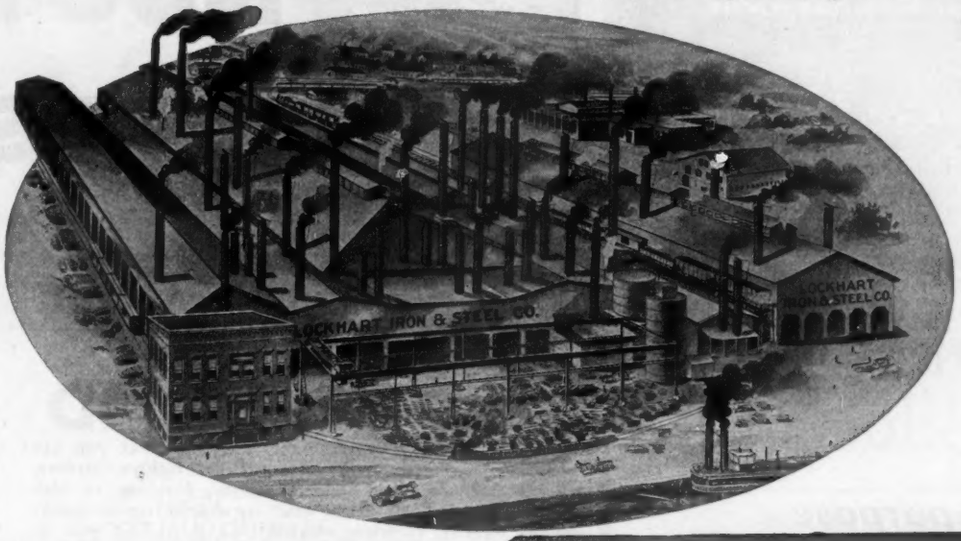

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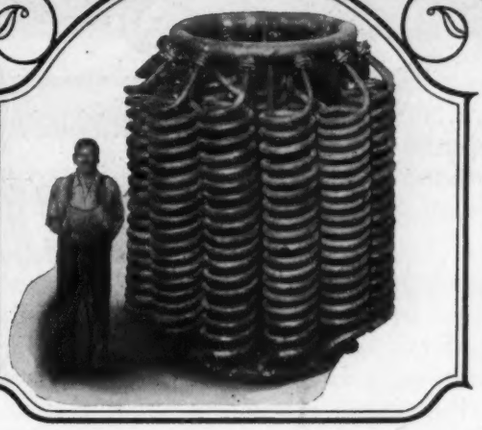

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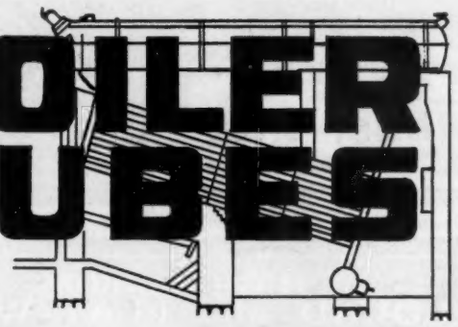

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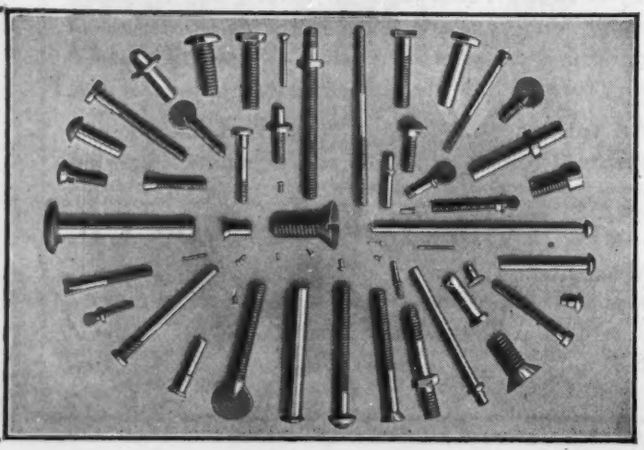

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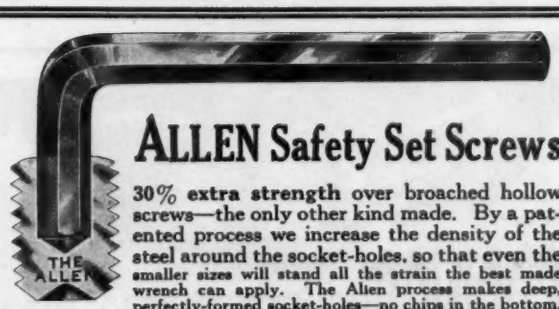

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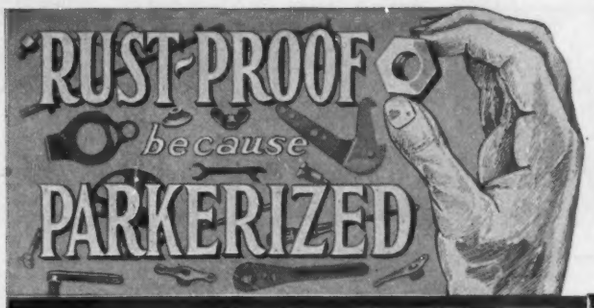

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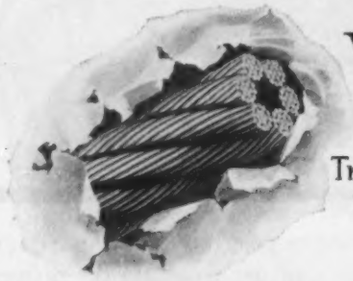

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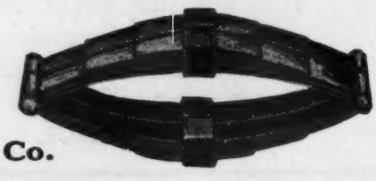

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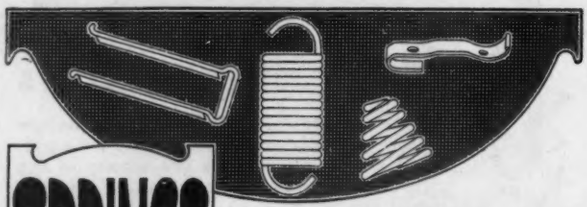

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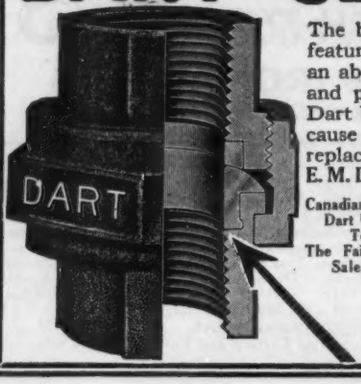

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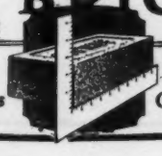

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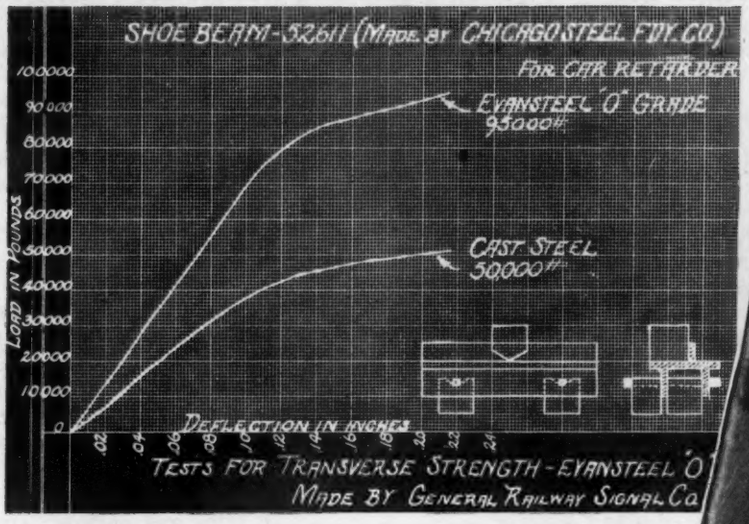

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IRON TRADE REVIEW

Resale Equipment News

Current Announcements and News of Plant Liquidations, Public Auctions of Equipment, Proposals, Bids, Sales, Etc.

June 24, 1926

REAL estate, buildings and machinery of the former Hoosier Rolling Mill Co., now the Mid-States Steel & Iron Corp., Terre Haute, Ind., will be disposed of at private sale, as a whole or in various parcels by the receivers and the Security Trust Co., trustee, at the office of the Citizens Trust Co., Terre Haute, July 26. The Citizens Trust Co. and Frank J. Wolfe are co-receivers and the Security Trust Co., Indianapolis, is trustee for the bondholders.

* * *

Auction sale of salvage property will be made, July 8, at Plattsburg Barracks, N. Y., including a quantity of mixed iron and steel scrap, old iron ranges and aluminum.

* * *

Several lathes and grinders and a miscellaneous lot of textile finishing machinery will be offered at auction June 24 at the plant of Fiskdale Finishing Co., Fiskdale, Mass. Samuel T. Freeman Co. are the auctioneers.

* * *

Fifty or more machine tools and metal working machines were offered at auction at the plant of Groff-Bent Corp., Medford, Mass., formerly manufacturer of steel beds and mattresses, June 22, under the direction of Samuel T. Freeman Co.

* * *

Bids will be received until July 7 by the quartermaster at the general reserve depot, Schenectady, N. Y., for surplus material, including corrugated sheets, iron and steel scrap, lathe, planer, table saws, circular saw and miscellaneous hand tools.

* * *

Bids will be received until June 29 by the salvage officer at Mitchell Field, L. I., for a tonnage of ferrous and nonferrous scrap, including aluminum, brass, copper, iron and steel, as well as some rubber and battery scrap.

* * *

Standard tools to the number of more than 1000 at the plant of the Colts Patent Firearms Co., Hartford, Conn., surplus equipment not now in use, are being liquidated by Botwinick Bros. Inc., New Haven, Conn. The assortment covers a wide assortment of tools.

* * *

Burrell Wright, receiver for the Imperial Drop Forge Co., Indianapolis, Ind., has petitioned the superior court of Marion county for permission to sell the property and assets of the company, as a going concern or in parcels. The court has set June 28 as a date for hearing on this petition and at that time a date will be set for the sale, if it is determined to dispose of the property.

* * *

Stock and fixtures of the Geiger Herold Brush Co., 10026 Detroit avenue, Cleveland were sold at bankrupt auction June 23. It included brushes and parts, three trimming machines, five bristle machines, one boring machine, sander power beader, power fluted roll automatic welder, wire shear, punch press, arbor press, wire strenghtening machine, three motors, vises and small tools.

* * *

Stock and fixtures of the Summit Salvage and Machinery Co., 241 Furnace street, Akron, O., will be disposed of at liquidation sale June 24 by Todd & McCoy, auctioneers, Cleveland. The sales includes two gear shapers, seven lathes, two saws, eight drill presses, two cutters, five buffing stands, five foot punches, radial drill, two gas engines, air compressor, 30 and 60-horsepower motors, and miscellaneous material.

* * *

Property, assets and business of the Illinois Thresher Co. Inc., Sycamore, Ill., will be sold at receiver's sale, July 12, by Edward M. Burst, Sycamore, Ill., receiver. The sales includes factory buildings, power plant, machine tools, woodworking machinery, foundry equipment and supplies, finished steam engines and threshers, parts, jigs, dies, templets, patterns, derricks, chain hoists, air hoists, trolley systems and cranes.

Sales Calendar

June 24—Liquidation auction of stock and fixtures of Summit Salvage & Machinery Co., Akron, O.

June 24—Auction of miscellaneous equipment at plant of Fiskdale Finishing Co., Fiskdale, Mass.

June 28—Hearing on petition of receiver for sale of property of Imperial Drop Forge Co., Indianapolis, Ind.

July 7—Bids on surplus material at reserve depot, Schenectady, N. Y.

July 8—Auction sale salvage property at Plattsburgh Barracks, N. Y.

July 12—Receiver's sale property of Illinois Thresher Co., Sycamore, Ill.

July 26—Mill, buildings and land of former Hoosier Rolling Mill Co., Terre Haute, Ind., to be sold by receivers.

Soviet Iron Ore Output Nearly Doubled

Washington, June 22.—Iron ore production in the Soviet union for the first half of the current fiscal year, Oct. 1 to April 1, in the three principal producing regions, was 1,474,700 metric tons, compared with 787,000 tons for the same period last year, according to a bulletin received by the Russian Information bureau. The increase was 87 per cent. The regional output was as follows: Krivoi Rog. 1,017,500 tons, Ural 421,500 tons, Central Region 35,700 tons.

During the same period, according to statistics of the supreme economic council, the value of the output of the metal industry of the Soviet union was $187,202,500, an increase of 64 per cent over the same period of last year.

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3' Reed-Prentice Radial, latest type.
4' Reed-Prentice Plain Radial, M. D. (2).
7' Cincinnati-Bickford Plain Radial Drill.
24" Hollingsworth Back Geared Crank Shaper.
36" x 30" x 10' Newton Slab Miller.
No. 2-M Potter & Johnson Automatic Millers.
No. 5B Brown & Sharpe Plain Miller.
No. 3 Becker Vertical Miller. Belt Driven.
No. 2 Pratt & Whitney Vertical Die Sinker.
No. 1 Cleveland Plain Miller S.P.D. (2)
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37" Bullard Vertical Boring Mill.
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42" Bullard Vertical Boring Mills.
28" Gisholt Turret Lathe, Belt Driven.
13" x 21" x 8' Star Gap Lathe, Belt Drive.
24" x 14' Reed-Prentice Grd. Hd. Lathe.
25" x 12' LeBlond Q.C.G. Lathes (6).
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No. 1 Brown & Sharpe Univ. Cylin. Grinder.
No. 2 Oakley Univ. Tool and Cutter Grinder.
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18" Gould & Eberhardt Gear Hobber.
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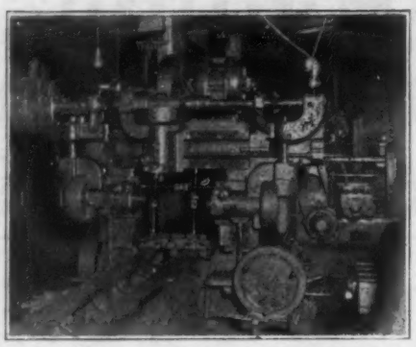

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1—Marine type, non-reversing Steam Engine, 250 H.P., 11" x 22" x 14".
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Pumps, Condensors, Wire Rope.

R. POLIAKOFF 709 Sixth Avenue, New York City

ARC WELDING EQUIPMENT

TRANSFORMERS, MOTOR & GASOLINE ENGINE GENERATOR SETS
WELDING ACCESSORIES

ALLAN MANUFACTURING & WELDING CO.
726 Washington St., Buffalo, N. Y.
Wanted; Distributors for desirable territories

Simmons Machine Tool Corp. offers

3—30″ x 11′ American Geared Head Lathes, arranged motor drive.
2—30″ x 13′ American Geared Head Lathes, arranged motor drive.
1—42″ x 18′ Geared Head Niles-Bement-Pond Lathe.
6—6″ Gleason Gear Generators.
2—11″ Gleason Gear Generators.
16—18″ Gleason Gear Generators.
1—No. 4-B Nazel Pneumatic Hammer.
1—96″ Long-Allstatter Multiple Punch Size C.
2—50″ x 36′ Geared Head Motor Driven Pittsburgh Lathes.
29—20″ Cincinnati Rotary Tables.
7—24″ Cincinnati Rotary Tables.
5—40 lb. Bradley Hammers.
1—25 lb. Bradley Hammer.
1—No. 16 Blanchard Vertical Motor Driven Grinder.

SIMMONS
MACHINE TOOL CORP.

1210 Troy Road, Albany, N. Y.

149 Broadway, New York City——————90 Exchange St., Buffalo, N. Y.

BLOWERS

No. 6½ Connersville Rotary Blower, 20″ intake and discharge.

No. 4 Roots Rotary Blower, 14″ intake and discharge.

No. 143 G. E. Centrifugal, direct motor driven, 16″ inlet and discharge.

Sirocco double blower, direct driven by DeLaval turbine. 16,000 cu. ft. against 20″ pressure.

Hundreds of fans, exhausters, and pressure blowers.

COME OVER TO JERSEY AND SEE US

Send for our monthly list of the largest stock in the United States of slightly used and thoroughly overhauled MACHINE TOOLS, POWER, ELECTRICAL AND CONTRACTOR'S EQUIPMENT.

WICKES
MACHINERY CO.
Jersey City, N. J.
Established 1900

FOR SALE

4 NICHOLS MOLDING MACHINES

In first class condition. Two of these machines are Nichols 10-32 combination jolt and power squeeze and two are 10-32 combination jolt and power squeeze with drawing device of the heavy inverted type. Will sell very reasonable.

Jefferson Union Co., Inc.,
Lockport, N. Y.

FOR SALE

TOOLS FOR STRUCTURAL IRON WORK

PUNCHES and SHEARS

1—Hanna Air Riveter, 102″ reach.
5—14′ Radial Countersink Drills, 3 motor drive, but without motor, 2 with 5 H.P. 220 Volt DC motor.
1—CP & S Style X Manhole Punch, 22″ x 30″, with 20 H.P., 220 volt DC motor.
1—10″ ASB Coping Punch, belt drive.
1—Cold Press, capacity 24″ I-Beams.
1—19″ Liner Bar Machine.
1—No. 6-60 Quickwork Rotary Shear, capacity 1″, with 15 H.P., 220 volt DC motor.
1—Hilles & Jones No. 2 Horizontal Punch, 8″ Throat, belt drive.
1—Berry & Son Punch, 42″ Throat, belt drive.
2—Long & Alstatter Punches, 48″ Throat, belt drive.
2—Southwark Punches, No. 5-48″ Throat, Belt drive.
2—Southwark Punches, No. 5-48″ Throat, 10 H.P., 220 volts, DC motor.
1—Southwark Punch, No. 5-60″ Throat, 10 H.P., 220 volt, DC motor.

Subject to Prior Sale and Inspection

For further information address

THE AMERICAN SHIP BUILDING CO.
Cleveland, Ohio

You will find it *profitable* to advertise your surplus machinery for sale in this section. Send us copy for insertion in next week's issue.

601

Real Bargains for Quick Sale—

LATHES

14″ x 6′ Worcester Semi Q. C.
16″ x 8′ Morris Q. C.
16″ x 8′ Morris Geared Head.
18″ x 8′ Morris Q. C.
18″ x 10′ Morris Q. C.
21″ x 8′ LeBlond H. D. 220 v., D. C.
22″ x 10′ Morris Geared Head.
22″ x 12′ Morris Q. C.
30″ x 14′ Pond Q. C. Taper, 220 v., D. C.
32″ x 17′ Pond Single B.G., Cone
36″ x 18′ Niles Single B.G., Cone.
60″ x 26′ Niles T.G., Cone.

PLANERS

32″ x 32″ x 10′ Niles, 2 Heads.
32″ x 32″ x 12′ Pond, 2 Heads, Motor.
36″ x 36″ x 10′ Niles, 4 Heads.
38″ x 38″ x 12′ Niles, 2 Heads.
38″ x 38″ x 16′ Niles, 3 Heads.
42″ x 42″ x 12′ Niles, 4 Heads.
42″ x 42″ x 14′ Pond, 3 Heads.
42″ x 42″ x 14′ Pond, 4 Heads, Motor.
48″ x 48″ x 20′ Pond, 4 Heads, M. D.
60″ x 60″ x 14′ Pond, 4 Heads, Motor.
60″ x 60″ x 24′ Niles, 4 Heads, Belt.
96″ x 72″ x 12′ N-B-P Rev. Motor.
10′ x 10′ x 36′ Belts, Motor.

SHAPERS

16″ S. G. Stockbridge.
16″ B. G. Stockbridge.
20″ B. G. Stockbridge.
26″ B. G. Niles Acme.
26″ Gear Box Stockbridge.
26″ Bement Double Traveling Head, Motor.

RADIALS

5′ Niles Universal Gear Box.
5′ Niles Semi-Universal Gear Box.
6′ Niles Semi-Universal Gear Box.
6′ Niles Full Univ. Gear Box.
6′ Niles Universal, Motor.

BORING MACHINES

60″ x 4″ Bar Niles Horizontal B & D Machine.
3½″ Ridgway Horiz. Floor B & D Machine.
5″ Bar Niles Floor Borer.
18″ P & W Side Head Mill.
42″ Niles Vert. B & T Mill.
53″ Niles Vert. B & T Mill.
62″ Niles Vert. B & T Mill.
73″ Niles Vert. B & T Mill.

CRANE, PUNCHES AND SHEARS, AND MISCELLANEOUS EQUIPMENT

25-Ton Niles 115′ Span, 4-Motor Yard Crane and 610′ Runway.
¾″ Cap. L. & A. P. and S Motor.
1″ x 1″ Cap 48″ L. & A. P. and S Motor.
⅛″ x ⅛″ Cap. 12″ Throat L. & A. Horiz. Punch.
185 lb. Motor Driven Air Hammer.
800 lb. Bement Single Frame Hammer.
800 lb. Bement Board Drop.
No. 3 Mitts & Merill Keyseater.
48″ B. & S. Spur Gear Cutter.
2″ Cox Lever Grip Pipe Mach. D. C. Motor.
No. 4-B Ver. Miller, Rotary Becker.
No. 3 Greenerd Arbor Press.

NILES
TOOL WORKS CO.

Division Niles-Bement-Pond Co.

HAMILTON, OHIO

New York, 111 Bway.
Birmingham, Brown-Marks Bldg.
Boston, 125 Purchase Street
Chicago, 33 S. Jefferson St.
Cincinnati, 338 W. 4th St.
Cleveland, 1433 E. 12th St.
Detroit, 5935 Cass Ave.
Los Angeles, 454 E. 3d St.
Philadelphia, 2415 Chestnut St.
Pittsburgh, 115 Empire Bldg.
Rochester, 89 E. Ave.
St. Louis, 516 N. 3d St.
San Francisco, 917 Howard St.
John Bertram & Sons Co., Dundas, Ont., Canada
London, Eng., 25 Victoria St., S. W.

Opportunities

Advertisements in this section are referred to by those seeking plants and plant sites, miscellaneous semi-finished and finished raw materials; by those who desire agencies.
Advertising Rates: 1" One Time $5.00; 2" One Time $9.50; 3" One Time $14.00; 4" One Time $18.00

OUR CLIENT

who owns and operates two metal working plants, one in Chicago district and one in Florida, seeks individual or group of men experienced in structural steel work to invest $50,000 and upward in growing business. Net operating profits first four months 1926 were over $18,000.00. Both plants are being successfully operated.

For a personal interview in our New York Office, latter part of June, address IRL ROSE, 226 West 47th Street, New York City.

Wanted for New England

Experienced machine tool salesman wants to represent one or two good lines of machine tools or similar equipment in New England.

A commission arrangement is preferred and equipment must have good sales possibilities. References gladly furnished.

Address Box 743, Iron Trade Review, Cleveland.

LISTEN!

Opportunity knocks — but you've got to meet her at the door.

Watch these pages!

609

ROLLING MILL FOR SALE

All of the Real Estate, Buildings and machinery belonging to the former Hoosier Rolling Mill Company, now Mid-States Steel and Iron Corporation, located at Terre Haute, Indiana, will be sold at private sale, as a whole or in various parcels by the Receivers and the Security Trust Company, Trustee, at the office of the Citizens Trust Company, at Terre Haute, Indiana, at 10 o'clock A. M. July 26, 1926.

Interested parties are invited to view the properties or write for further information to the undersigned:

CITIZENS TRUST CO.
FRANK J. WOLFE
Co-Receivers,
Terre Haute, Indiana
OR
SECURITY TRUST COMPANY
Trustee for Bondholders,
Indianapolis, Indiana

SPECIALISTS IN
FACTORIES
FOR SALE OR LEASE

Have professional engineers with extensive plant experience who can therefore appreciate your requirements, aid you in locating a suitable factory or manufacturing industry
TECHNICAL SERVICE COMPANY
233 Broadway, N. Y. C. Whitehall 8412

NEWARK, N. J.
FOUNDRY
FOR SALE
Main Building Brick Steel. 125 x 550, P.R.R. side Tracks: Traveling Cranes: Cupola capacity 100 tons. Main Building suitable for Structural steel plant: and can be sold separately.
DAVID HOUSTON, BOND & CO., Inc.
Military Pk. Bldg., 60 Park Place Newark, N. J.

SMALL FOUNDRY FOR SALE

on Central Railroad of New Jersey, 30 minutes from New York City. Bldg. 60 x 120. No. 24 Parson Cupola. 150 wood flasks. Tabor roll over machine. Compressor, monorail, electric hoist, Sashweight patterns. All at bargain for quick sale. Address Box 788, IRON TRADE REVIEW, Cleveland.

WANTED

1 Used Cutting Off Machine

to cut off 3½% Nickel Steel 4" to 6" diameter. Automatic feed. To make several cuts on the bar simultaneously. Give full description, kind of drive, price and inspection point. Address: P. O. Box 249, Pittsburgh, Pa.

Business Opportunity

GENERAL REPRESENTATIVE for the states wanted

Highly important invention, cast iron and iron, cast iron and copper can be successfully welded by a new process.

Party must be able to furnish $4,000 to $5,000. Address Box 789, IRON TRADE REVIEW, Cleveland.

BLAST FURNACES
and other plants wanted for
DISMANTLING
Specialists on Blast Furnaces—Many years experience
HENRY POTTS & CO.
Bankers Trust Bldg., Philadelphia

PATENT FOR SALE

on Turbine Engine, steam or compressed air. Turbine engine can be used wherever power is required, generating electric power for factories, steam ships, water works, pumping, irrigating, etc. Valuation $2,000,000. Would take $50,000 cash and 10% of production. P. J. Maher, Owner, 157 East 18th St., New York, N. Y.

Your wants advertised here will bring results.

Employment

POSITIONS OFFERED Minimum ad., 50 words, $3.00 Additional words, $.06 each

When a box address is desired count seven words in addition to your copy

POSITIONS WANTED Minimum ad., 30 words, $1.00 Additional words, $.03

Positions Offered

SALES REPRESENTATIVES WANTED TO handle highest grade rivet sets, compression riveting dies and shear blades in the following territories, Philadelphia, New York, Boston, Pittsburgh, St. Louis, Kansas City, New Orleans, and Memphis.

These tools will sell themselves and every cooperation will be given the salesmen by the factory. Address Box 787, IRON TRADE REVIEW, Cleveland.

FOREMAN WANTED

For foundry in the Pittsburgh, Pa. district, making small steel castings. Require man for supervising molding in green sand, using rigged patterns on bumpers, etc. Address Box 783, IRON TRADE REVIEW, Cleveland.

WANTED:—TOOL STEEL SALESMAN. Must be thoroughly experienced for warehouse handling well known grade. Salary, expenses and bonus. Address Box 786, IRON TRADE REVIEW, Cleveland.

SALESMAN WANTED:—TO SELL FERRO Alloys to steelmakers. Must have some knowledge of steel mill practice. Address Box 776, IRON TRADE REVIEW, Cleveland.

THE BEST WAY TO GET A GOOD POsition in drafting or engineering is to file application direct with some of our clients who are depending on us to get competent and experienced applicants for their vacant positions. Send stamp for blank and list of vacant positions. The Cleveland Engineering Agency Co., Rose building, Cleveland, O.

SUPERINTENDENTS, EXECUTIVES, ENGIneers, $3,000-$25,000, find our individual confidential service effective in making desired connections. Personally planned by MR. JACOB PENN, the eminent employment authority, known to leading business men throughout America. Not agency. Jacob Penn, Incorporated, 395 Broadway, New York.

IF YOU ARE OPEN TO OVERTURES for new connection, and qualified for a salary between $2500 and $25,000, your response to this announcement is invited. The undersigned provides a thoroughly organized service, of recognized standing and reputation, through which preliminaries are negotiated confidentially for positions of the calibre indicated. The procedure is individualized to each client's personal requirements; your identity covered and present position protected. Established sixteen years. Send only name and address for details. R. W. Bixby, Inc., 110 Downtown Building, Buffalo, New York.

Positions Offered

WANTED

Draftsmen

Experienced in Rolling Mill Work

Apply,

Mesta Machine Co.,

Pittsburgh, Pa.

WANTED:—BY AN EXPERIENCED TRADer (opening an Office in Pittsburgh) two or more hustlers on a salary and commission basis to trade in pig iron, billets, wire rods, sheet bars, sheets, shapes, plates, tubes, etc. State age, experience and earnings you have been making also what lines you specialize in. Address Box 769, IRON TRADE REVIEW, Cleveland.

WANTED:—FOREMAN FOR GALVANIZing department of old established firm manufacturing oil drums and ware. Must be a producer and a high class galvanizer, experienced on above work. Best of references required. Location Southern California. In reply state previous experience and salary expected. Address Box 773, IRON TRADE REVIEW, Cleveland.

SUPERINTENDENT WITH BROAD PRACtical experience in the manufacture of sheet metal ware, oil drums and containers. Capable of designing dies, double seaming wheels and equipment. Experienced in time study, routine, etc. Must be a high-class active producer. Old established plant. Location southern California. Apply by letter giving complete detail as to age, education, experience, references and salary expected. Address Box 778, IRON TRADE REVIEW, Cleveland.

WANTED:—DRAFTSMAN CAPABLE OF doing work and taking charge of work requiring two men for small steel plant. State experience, age, whether married or single and salary expected. Address Box 774, IRON TRADE REVIEW, Cleveland.

WANTED:—A YOUNG OR MIDDLE AGED man to take complete charge of finishing department in a steel Foundry of 400 to 500 ton capacity. Excellent opportunity for a hustler. Location—middle west. Give experience and references, also salary expected in first letter. Address Box 777, IRON TRADE REVIEW, Cleveland.

Positions Wanted

MAN WITH CONSIDERABLE MECHANIcal, *purchasing, production,* cost and executive experience, at present employed, desires position offering good opportunity. Single, age 38. K. G. Haxtun, 163 Best Street, Buffalo, N. Y.

EXECUTIVE, MANY YEARS SUCCESSful manufacturing, engineering and selling experience in machine shop and foundry products desires connection with first class concern, both actively and financially. Address Box 779, IRON TRADE REVIEW, Cleveland.

MELTER

Open for position, would like to hear from some Steel Foundry. Have had fifteen years experience on steel castings. Can give best of references. Address Box 790, IRON TRADE REVIEW, Cleveland.

GALVANIZING SPECIALIST

German, 30 years, many years experience. Versed galvanizing specialist for steel and iron wire after latest proceeding, seeks position in North America. Detailed offers solicited under Dd. 4402 to Ala, Haasenstein & Vogler A.-G., Dortmund, Germany.

BLAST FURNACE MANAGER OR SUPERintendent. Eighteen years experience divided between U. S. Steel Corporation and merchant furnace plants. An affable executive capable of handling operations in every detail as well as the office, traffic, laboratory and purchasing departments. Believes in maintaining his plant and equipment in A-1 condition. Address Box 781, IRON TRADE REVIEW, Cleveland.

SITUATION WANTED: — SUPERINTENDent or plant manager. Middle aged man with wide experience in manufacture, sale and service of heavy machinery, locomotive cranes, contractors, mining and smelting equipment. Clean record, excellent references, at present employed. Address Box 785, IRON TRADE REVIEW, Cleveland.

SALES REPRESENTATIVE, MARRIED, 42 years old, 10 years traveling experience St. Louis and West, Pig Iron-Coke-Alloys, eight years freight traffic work. Address Box 771, IRON TRADE REVIEW, Cleveland.

Fill-in and Contract Work

CASTINGS — FORGINGS — STAMPINGS — PATTERNS
MACHINE PRODUCTS — DIES, JIGS, FIXTURES and TOOLS

HOT DIP GALVANIZING

We have the largest hot dip job galvanizing plant and kettles in the United States.

We have the most modern equipment to do first class galvanizing at lowest prices. Galvanized Products Furnished.

Prime Western Zinc used exclusively.

Send us your inquiries

Joseph P. Cattie & Brothers
Gaul and Letterly Streets
PHILADELPHA

PRESSED METAL PARTS
Economical—Light—Clean
PETER GRAY
and Sons Company
CAMBRIDGE, MASS.
"Started in 1878 and Growing Yet"

THE
QUINCY STOVE
MFG. CO., QUINCY, ILL.
Stoveplate, Light and Medium
GRAY IRON CASTINGS
Pattern Shop

Your Detroit Plant

Give us blue prints and we can turn out your complete product for distribution throughout the Middle West.

From castings, stampings and machining on to the assembling, our plant is equipped for complete service.

Permit us to quote on your requirements. Send blue prints and specifications to Box 730, Iron Trade Review, Cleveland.

The Electrical Seamstress

Needle and thread enlist the aid of electricity in making sewing a lighter task for the modern woman.

The "stitch in time" becomes a proud accomplishment of the housewife . . . she glories in using her electrical sewing machine.

Back of the scene is the metalworking industry . . . making possible this dream of a few years ago . . . supplying castings, forged, stamped and machined parts for the electrical seamstress.

Advertisers in the Fill-in and Contract Work Section are engaged in the production of metal parts and would like an opportunity to quote on any work you may have to place.

IRON TRADE REVIEW

Get your share of future business—advertise NOW

Fill-in and Contract Work

CASTINGS — FORGINGS — STAMPINGS — PATTERNS
MACHINE PRODUCTS — DIES, JIGS, FIXTURES and TOOLS

CASTINGS

CONNECTICUT

NELSECO FOUNDRY, New London. Gray iron; 50% steel, 5 lbs. to 10 tons. Superior steel castings up to 2,000 lbs. Machine work.

THE SESSIONS FOUNDRY CO., INC., Bristol. Gray iron from smallest to thirty tons. Pattern and machine shop.

I. S. SPENCER'S SONS, INC., Guilford. Gray iron, brass and bronze castings, machined, japanned or plated. Screw machine products.

DELAWARE

DEEMER STEEL CASTINGS CO., Washington Boulevard, New Castle. Small and medium size steel castings.

ILLINOIS

CHICAGO STEEL FOUNDRY CO., Chicago, Kedzie Ave. & 37th St. Electric furnace steel castings of the highest quality.

EGYPTIAN IRON WORKS, Murphysboro. Gray iron and semi-steel castings, 5 lbs. to 2500 lbs. Machine and pattern shop.

ILLINOIS FOUNDRY CO., Springfield. Light and medium gray iron and semi-steel castings., Pattern shop.

THE MOLINE FOUNDRY & MACHINE CO., Moline. Gray iron castings from one ounce to two tons. Machine and pattern shop.

A. PLAMONDON MFG. CO., Chicago, 5301 South Western Blvd. Gray iron castings. Machine and pattern shop.

WANNER MALLEABLE CASTINGS CO., Certified Malleable Castings. Carefully finished. Pattern Shop. Works, Hammond, Ind.; Beloit, Wis.

INDIANA

BERTSCH & CO., Cambridge City. 500 to 40,000 lbs. gray iron or semi-steel. Pattern work and machine shop.

HUBBARD STEEL FOUNDRY CO., East Chicago. Steel castings up to 100,000 lbs. sand iron and chilled iron rolls.

KENDALLVILLE FOUNDRY CO., Kendallville. Can fill orders from patterns to completed castings in gray iron, semi-steel, brass, bronze and aluminum.

CASTINGS

INDIANA

MARION MACHINE, FOUNDRY & SUPPLY CO., Marion. Gray iron, semi-steel up to 20,000 lbs. Building specialties; pattern and machine work.

MUNCIE MALLEABLE FOUNDRY CO., Muncie. Malleable iron castings for all purposes.

RELIANCE FOUNDRY CO., Richmond. High quality gray iron and semi-steel castings, one to five tons. Let us quote you prices.

WANNER MALLEABLE CASTINGS CO., Certified Malleable Castings. Carefully finished. Pattern Shop. Works, Hammond, Ind.; Beloit, Wis.

I O W A

CENTRAL FOUNDRY CO., Marshalltown Light and medium gray iron. Pistons and auto acces. Smooth finish. Quantity with quality production.

DAVENPORT MACHINE & FOUNDRY CO., Davenport. Heavy gray iron and semi-steel to ten tons. Mfgrs. of "Davenport" Molding Machines.

KENTUCKY

THE DRUMMOND MANUFACTURING CO., Louisville, 1214 West Main St. Gray iron, semi-steel castings. Production work desired. Quick shipments.

MICHIGAN

ALPENA INDUSTRIAL WORKS, Alpena. Gray iron castings, 2,000 lbs. or less. Pattern shop and machine shop well equipped.

AUTO SPECIALTIES MFG. CO., St. Joseph. Highest grade malleable castings, either plain or machined, and finished to blue print.

BENTON HARBOR MALLEABLE FOUNDRY CO., Benton Harbor. Reliable malleable castings plain or machined, to blue print.

ENTERPRISE BRASS WORKS, Muskegon. Bronze and aluminum castings. Plumbers brass goods.

LAKE SHORE ENGINE WORKS. Marquette. Gray iron castings up to fifteen tons. Pattern shop and machine shop.

REED FDRY. & MACH. CO., Kalamazoo. Light steel castings from one ounce to 1000 lbs. Specializing in Vanadium steel.

CASTINGS

MISSOURI

A. GILBERT & SONS BRASS FOUNDRY CO., St. Louis. Castings in brass, bronze and aluminum. Patterns, finishing, babbitt metal solder.

NEW JERSEY

WEST BERGEN IRON FOUNDRY, Jersey City, 21-27 Pollock Ave. Soft gray iron castings up to 5 tons each.

NEW YORK

ACME STEEL & MALLEABLE IRON WORKS INC., Buffalo. High grade malleable, gray iron and open hearth steel.

BUFFALO BRONZE DIE CAST CORP., Buffalo, 100 Arthur St. Brass and bronze sand castings. Furnished to close tolerances.

BUFFALO FOUNDRY & MACHINE CO., Buffalo. Gray iron, semi-steel and special mixture castings, 1 to 200 tons. Pattern and machine shop.

FARRAR & TREFTS, INC., Buffalo, 67 Perry St. Gray iron, 1 lb. to 50 tons. Semi-steel, chemical and chilled castings. Manholes and grates.

FRONTIER BRONZE CORP., Niagara Falls. Titanium, aluminum, bronze, copper, aluminum, brass castings. Bronze bushings in stock.

MARCY FOUNDRY CO., New York, 74 Beekman St. Light gray iron castings; machining facilities. Foundry at Perth Amboy, N. J.

MENEELY BRASS & BRONZE CO., INC., Watervliet, 1537 Broadway. Brass, bronze and aluminum castings of first class quality.

METAL & ALLOY SPECIALTIES CO., INC., Buffalo. Brass, bronze, aluminum, monel metal, copper, nickel bronze. Pattern, mach. shop.

NAYLOR BROS., Peekskill. Gray iron up to 4 tons. Machine and pattern shop. Pulley castings and hangers. Daily boat service to New York City.

SHERWOOD MFG. CO., Buffalo, 1701 Elmwood Ave. Brass and bronze castings to your specifications. Complete machining facilities.

Fill-in and Contract Work

CASTINGS—FORGINGS—STAMPINGS—PATTERNS
MACHINE PRODUCTS — DIES, JIGS, FIXTURES and TOOLS

CASTINGS

NEW YORK

SWEET & DOYLE FDRY. & MCH. CO., Troy, Green Island. Med. and hvy. gray iron mchy. castings up to 10 tons. Pattern, machine, engineering shops.

A. L. SWETT IRON WORKS, Medina. Plumbers specialties, street castings and general gray iron castings. Machine work. Specialties.

OHIO

THE AMERICAN CRUCIBLE PRODUCTS CO., Elyria. Brass, bronze and aluminum castings. Machined parts. Mill brasses a specialty.

THE ARMSTRONG MFG. CO., Springfield. Gray iron and 50¼ or more open hearth steel castings. 1 to 10,000 lbs. Pattern, machine shops.

BUCKEYE IRON & BRASS WORKS, Dayton. Brass and aluminum. Valve castings a specialty. Castings machined if desired.

THE CINCINNATI STEEL CASTINGS CO., Cincinnati. Queen City and Spring Grove Aves. Electric process steel castings only.

THE COMMERCIAL STEEL CASTINGS CO., Marion. Acid open hearth steel castings 5 lbs. to 10 tons. Shipping facilities on five railroads.

CRUCIBLE STEEL CASTING CO., Cleveland. Electric steel castings. Specialize in nickel-chrome alloys for abrasive wear and high ultimates.

THE EBERHARD MFG. CO., Cleveland, 2734 Tennyson Rd. Light malleable iron castings for automobile and general purposes.

THE G. & C. FOUNDRY CO., Sandusky. Light and medium weight soft gray iron and semi-steel castings.

THE MACHINED STEEL CASTING CO., Alliance. Acid open hearth steel castings, 1 lb. to 100,000 lbs. each. Castings machined if desired.

THE MIDWEST CASTING CO., Middletown. Makers of malleable iron castings of every description. Either jobbing or productive basis.

THE SILVER MFG. CO., Salem. Gray iron castings, light and medium. Machined if desired.

THE SPRINGFIELD ALUMINUM PLATE & CASTINGS CO., Springfield. Aluminum castings and match plates. First class work.

THE WEST STEEL CASTING CO., Cleveland. High grade light work steel castings, 1 to 500 lbs. Quantity work desired. Qual. and service guaranteed.

CASTINGS

PENNSYLVANIA

ALLEN MACHINE CO., Erie. Gray iron castings up to 50 tons. Chilled iron rolls. Machine and pattern shop.

AMERICAN ENGINEERING CO., Philadelphia, Aramingo & Cumberland Sts. Gray iron and semi-steel from 1 to 24,000 lbs. Long and varied experience.

DAVIES & THOMAS CO., Catasauqua, (N. Y. Office, 342 Madison Ave.) Gray iron up to 10,000 lbs. Complete machine and pattern shops.

THOMAS DEVLIN MFG. CO., Philadelphia. Third St. & Lehigh Ave. Malleable and soft gray iron castings.

FORT PITT STEEL CASTING CO., McKeesport. Specializing in accurate, uniform electric stee castings of every description.

GRAY IRON FOUNDRY CO., Reading. Specializing on small castings of every description Machining or hand molded ,tumbled or sand blasted.

IDEAL FOUNDRY & MACHINERY CO., Beaver Falls. Gray iron, 1 lb. to 5 tons. Brass and aluminum castings, pattern and machine shops.

JOHNSON BRONZE CO., New Castle. Brass and bronze castings, both machined and finished. From ½ lb. to 100 lbs. finished; ½ lb. to 1000 lbs. rough.

KENNETT FOUNDRY & MACHINE CO., Kennett Square. Chilled and gray iron castings, light and up to 5 tons. Machine, pattern shops.

KUEBLER FOUNDRIES, INC., The, Easton. Refined Malleable Iron Castings, every description. Motor Truck, Auto, Railway Car, Trackwork.

LOCOMOTIVE STOKER CO., Pittsburgh. Gray iron, semi-steel, brass, bronze and aluminum. Pattern and machine shop.

McGANN MFG. CO., INC., York, Box 326. Gray iron and semi-steel castings up to 15,000 lbs. Dryers, lime kilns, hydrators, complete equipment.

MARION MACHINE, FOUNDRY & SUPPLY CO., Scottdale. Gray iron, semi-steel, up to 20,000 lbs. Building specialties; pattern, machine work.

MEADVILLE MALLEABLE IRON CO., Meadville. High grade malleable castings from refined air furnace iron. Pattern and machine shop.

NATIONAL FOUNDRY CO., Erie. Steel castings of all descriptions. Pattern and machine shop in connection.

NORTH WALES MACHINE CO., INC., North Wales. Gray iron, superior quality machine or hand molded, sand blasted, pickled or tumbled.

PENN FOUNDRY & MFG. CO., Reading. Gray iron and semi-steel up to 3000 lbs. rough or machined. Cylinders, pistons, and intricate core work.

PITTSBURGH BRASS MFG. CO., Pittsburgh. Brass, bronze, aluminum and acid-proof castings. Machine shop.

CASTINGS

PENNSYLVANIA

READING STEEL CASTING CO., Reading. Offices and Warehouses in Principal Cities—prompt deliveries.

THE SHOOP BRONZE CO., Tarentum. Mill bearings, bushings, pickle crates, hydraulic, aluminum castings, large, small, rough or machined.

STANDARD ENGINEERING CO., Ellwood City. Heavy gray iron, semi-steel and air furnace iron castings. Pattern and machine shops.

TAYLOR-WILSON MANUFACTURING CO., McKees Rocks. Gray iron to 10 tons. Semi-steel Machine molded gears. Machine and pattern shops.

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MACHINE PRODUCTS — DIES, JIGS, FIXTURES and TOOLS

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Index to Advertisements

The star (*) indicates that the advertisement appears alternate weeks, the dagger (†) once a month.

A

†Abendroth & Root Mfg. Co. —
Acme Steel Co. 84
Acme Steel & Malleable Iron Works, Inc. 77
*Adamson Machine Co. 55
Air-Tight Steel Tank Co. 92
Akron Gear & Engineering Co. 65
Akron-Selle Co. 82
Albaugh-Dover Mfg. Co. —
*Alcumite Corporation, The..11, 12
*Allan Mfg. & Welding Co. —
Allegheny Steel Co. 14
Allen, Edgar, Steel Co., Inc. 92
*Allen Mfg. Co., The. 95
*Alliance Machine Co., The. —
Alliance Structural Co. 86
Allis-Chalmers Mfg. Co. 61
*American Adamite Co. ....Front Cover
†American Brass Co., The. 41
American Bridge Co. 87
American Chain Co., Inc. 80
American Chemical Paint Co. —
American Foundry Equipment Co. 69
†American Gas Association. —
†American Heat Economy Bureau, Inc. —
American Kron Scale Co. —
*American Malleable Castings Association, The 35
American Nickel Corp. 103
†American Pipe Bending Machine Co. —
American Pressed Steel Co. 84
*American Punch & Shear Works 59
†American Rolling Mill Co. 23
American Sheet & Tin Plate Co. 84
American Ship Building Co. 111
American Spiral Spring & Mfg. Co. 96
*American Spring & Mfg. Co. —
*American Steel Co. —
American Steel & Wire Co. 96
American Steel Foundries. 75
†American Telephone & Telegraph Co. —
American Terry Derrick Co. 80
American Tube & Stamping Co., The 83
Ams, Max, Machine Co. 61
Andrews Steel Co. 91
†Apollo Steel Co. —
†Armstrong Cork & Insulation Co. —
Ashland Fire Brick Co. 105
*Atlas Car & Mfg. Co. 81
Atlas Steel Casting Co. 73
†Auer Register Co. —

B

Babcock & Wilcox Co. 93
*Babcock & Wilcox Tube Co., The 94
†Baker Raulang Co., The. —
†Barnes Drill Co. —
Barnes-Gibson-Raymond, Inc. 96
†Barrett, Leon J. —
†Bartlett, C. O., & Snow Co. —
*Bay City Forge Co. —
†Beardsley & Piper Co., The 42
Beatty Machine & Mfg. Co. 81
Bedford Foundry & Machine Co. 81
†Beebe Brothers 97
*Belle City Malleable Iron Co. 77
Belmont Iron Works 86
Berryhill Malleable Iron Co. 76
Best, W. N., Corp. 67
Bethlehem Steel Co. 92
Birdsboro Steel Foundry & Machine Co. 63
Blacker Engineering Co. 71
Blake & Johnson Co., The. 61
Blaw-Knox Co. 80
Bliss, E. W., Co. 10
*Bliss & Laughlin, Inc. 88
†Blystone Mfg. Co. —
†Bollinger-Andrews Construction Co. —
Boston Gear Works Sales Co. 65
Box, Alfred, & Co., Inc. 81
Bradley, C. C., & Son, Inc. 55
Brassert, H. A., & Co. 99
†Breese Brothers Co., The. —
†Brighton Fire Brick Co. —
Brosius, Edgar E. 81
*Browne, deCourcy, Inc. 103
†Brown Hoisting Machinery Co. —
†Browning Crane Co., The. —
†Brown-Wales Co. —

C

†California White & Sugar Pine Manufacturers' Association —
†C. & B. Transit Co. —
*Cann & Saul Steel Co. 78
Canton Forge & Axle Co. 78
†Carborundum Co. —
Carle Machinery Co. 110
Carlyle Johnson Machine Co. 63
Carnegie Steel Co. 31
†Cascade Foundry Co. —
Castle & Wilson —
Cattie, Jos. P., & Brothers. 114
†Celite Products Co. —
Central Iron & Steel Co. 82
*Central Steel Co. —
Central Tube Co. 98
†Century Wood Preserving Co. 69
Chambersburg Engineering Co. 67
†Champion Machine & Forging Co., The —
†Chapman Engineering Co. —
Chemical Treatment Co. 88
Chicago Forging & Mfg. Co. 79
Chicago Gear & Mfg. Co. 65
Chicago Perforating Co. 83
Chicago Pneumatic Tool Co. 71
Chicago Rawhide Mfg. Co. 67
Chicago Steel Foundry Co. 107
Cincinnati Steel Castings Co., The 75
Citizens Trust Co. 112
†Clark Brothers Bolt Co. —
Clark Controller Co. 63
Cleveland-Cliffs Iron Co. 100
Cleveland Crane & Engineering Co. 25
Cleveland Pneumatic Tool Co. 71
*Cleveland Punch & Shear Works Co. 55
*Cleveland Wire Cloth & Mfg. Co. —
Cleveland Wire Spring Co., The 96
Climax Fire Brick Co. 105
†Cold Finished Steel Bar Industry —
Columbia Steel Co. 85
Columbia Steel Corp. (San Francisco) 97
Columbia Tool Steel Co. 92
†Columbus Forge & Iron Co. —
Columbus Malleable Iron Co. 77
Combustion Engineering Corp. 100
Commercial Steel Casting Co., The 75
†Connersville Blower Co. —
Contract Work Section 114
Cook Spring Co. 96
†Cooper, C. & G., Co. —
*Copper & Brass Research Association —
†Costello Engineering Co. —
Crescent Refractories Co. 104
Crosby Co. 82
Crucible Steel Casting Co. (Cleveland, O.) 75
*Curtis & Curtis Co., The. —
Cutler-Hammer Mfg. Co. 19
*Cyclops Foundry Co. —
†Cyclops Iron Works 97

D

Danly Machine Specialties Co. —
Danville Malleable Iron Co. 76
Dart, E. M., Mfg. Co. 98
Dayton Malleable Iron Co. 76
Decatur Malleable Iron Co. 77
Deemer Steel Casting Co. 71
Deming Co. —
Diamond Clamp & Flask Co. 69
†Donner Steel Co., Inc. —
Dover Fire Brick Co. 105
Drop Forgings Co. of New York 78
†Duer Spring & Mfg. Co. —
Duff Patents Co., Inc. 98

E

Eastern Machinery Co. 109
Eaton, Rhodes & Co. 102
Eccles, Richard, Co. 78
Eichleay, John, Jr., Co. 86
Electric Controller & Mfg. Co. ....Back Cover
†Electric Furnace Co. —
*Electro-Alloys Co. 75
*Electro Metallurgical Sales Corp. 36
†Elliott-Blair Steel Co. —
*Ellis, Frank I. 99
Employment Section 113
*Enterprise Brass Works 77
†Era Steel Co., The 73
Erdle Perforating Co. 82
*Erie Foundry Co. —
Erie Steel Construction Co. 80
Eureka Fire Brick Works. 104

F

†Fairbanks Co. —
†Farrel Foundry & Machine Co. 110, 120
Farrell-Cheek Steel Foundry Co. 39
†Fawcus Machine Co. —
†Federal Press Co. —
Federal Steel Foundry Co. 73
†Ferguson Gear Co., The. 65
Fill-in and Contract Work Section 114
†Firth-Sterling Steel Co. —
Fitzsimmons & Cole Machinery Co. 109
Flinn & Dreffein Co. 61
†Floersheim, B., & Co. —
Ford, J. B., Co., The. 104
Ford Motor Co. —
*Forest City Foundry Mfg. Co. 77
†Fort Pitt Spring & Mfg. Co. —
†France, J. H., Refractories Co. 105
*Frank, M. K. 110
†Franklin Core Rod & Gagger Co. —
†Franklin Steel Works —
†Frazer & Jones Co. —
†Freyn Engineering Co. ....1675 (Editorial)
Fuller-Lehigh Co. 67

G

Ganschow, Wm., Co. 65
General Electric Co. 15, 26
General Refractories Co. 105
†Gerstner Boiler Works. —
*G G G Metal Stamping Co. —
Giddings & Lewis Machine Tool Co. 109
*Globe Iron Co. —
Globe Wire Co. 92
*Gray-Gregory Galvanizing Co. 84
Gray, Peter & Sons Co. 114
Griffin Mfg. Co. 84
Gulf States Steel Co. 96, 97

H

Hagan, Geo. J., Co. 67
†Hammond Iron Works —
†Hanlon-Gregory Galvanizing Co. —
*Hanna, The M. A., Co. 44
Hanna Engineering Works —
Harbison-Walker Refractories Co. 105
Harnischfeger Corporation 28, 80, 81
Harrington & King Perforating Co. 82
Hauck Mfg. Co. 67
Haven Malleable Castings Co., The 76
†Hawkridge Brothers Co. —
*Haws Refractories Co. —
Haynes-Stellite Co. —
Hearne, William W., Inc. 88
Hendrick Mfg. Co. 79, 83
Heppenstall Forge & Knife Co. 78
Herman Pneumatic Machine Co. 69
Hillman Coal & Coke Co. 101
Hills-McCanna Co. —
†Hindley Mfg. Co. —
†Hinman, D. A., & Co. —
Holcroft & Co. 67
Hoover Steel Ball Co. —
Houston, Bond & Co., Inc., David 112
Hunter Saw & Machine Co. 65
*Hyatt Roller Bearing Co. 5
†Hyde Park Foundry & Machine Co. 55
*Hydraulic-Press Brick Co. —

I

†Illinois Clay Products Co. 104
Illinois Malleable Iron Co. 76
Illinois Steel Co. 88
*Illinois Steel Warehouse Co. 89
Industrial Chemical Products Co. —
*Industrial Gloves Corp. 69
†Industrial Maintenance Bureau 86
†Industrial Steel Casting Co. 51
Ingersoll-Rand Co. 8
Inland Steel Co. 85
International Furnace Co. 67
International Nickel Co., The 37
*International Oxygen Co. 86
†Interstate Iron & Steel Co. —
*Iowa Malleable Iron Co. —
Irving Iron Works Co. 103

J

†James, D. O., Mfg. Co. —
*Jarecki Mfg. Co. —
Jefferson Union Co., Inc. 111
Jenkins Brothers 98
Johnson, Carlyle, Machine Co. 63
*Joliet Wrought Washer Co. —
†Jones & Laughlin Steel Corp. —
†Jones, W. A., Foundry & Machine Co. 29, 30

K

Kalamazoo Malleable Iron Co. 76
*Kalamazoo Tank & Silo Co. 92

Engineering Directory, Pages 98, 99
Contents, Page 1637 (Editorial)
"Where-to-Buy," Page 50
Classified Advertisements, Pages 111-117

Index to Advertisements

†Kane & Roach ..... —
†Kardong Brothers ..... —
*Keating, E. F., Co..... —
Kennedy, Julian 99
Keokuk Electro Metals Co..... 103
Keystone Bronze Co..... 77
Kidd Drawn Steel Co..... 92
Kier Fire Brick Co. 105
†Kinnear Mfg. Co. ..... —
*Koppers Co. ....Inside Front Cover
*Kratzer, W. N., Co..... 86
Kropp Forge Co. 78

L

Laclede-Christy 104
Laclede Steel Co. 84, 110
Lake Erie Bolt & Nut Co..... 95
†Lake Shore Engine Works.... —
Lakeside Malleable Castings Co. 76
†Lakeside Steel Improvement Co., The 98
†Landis Machine Co..... —
*Landis Tool Co..... —
*Lansing Stamping Co..... 83
Latrobe Electric Steel Co..... 92
Laughlin, Alex, & Co..... 99
Lavino, E. J., & Co..... 104
†Lawrenceville Bronze Co..... —
†Leard, Wm., Co..... —
Leavitt, C. W., Co..... 103
Lewis Foundry & Machine Co. 63
Liberty Iron Pipe & Nipple Works 98
*Linde Air Products Co. ....Inside Back Cover
Link-Belt Co. 3, 77
*Liquid Fuel Engineering Co.... 67
*Ljusne-Woxna Co., Ltd..... 88
†Lockhart Iron & Steel Co.... 90
Logemann Brothers Co..... 59
*Long & Allstatter Co..... 59
†Loshbough-Jordan Tool & Machine Co. ..... —
Ludlum Steel Co. 88

Mc

McCabe, J. J., Lathe & Machinery Corp. ..... —
McClintic-Marshall Co..... 86
McKee, Arthur G., & Co..... 99
McKee, Willis 98
McMyler Interstate Co..... 16

M

*Mackintosh Engineering Co.... —
†Mackintosh-Hemphill Co. ..... —
Maher, P. J. 112
†Mansfield Sheet & Tin Plate Co. ..... —
Marchant, Geo. F., Co., The 71
Marion Malleable Iron Works 77
Marion Steam Shovel Co., The 81
Marquette Ore Co. 100
†Marquette Tool & Mfg. Co.... —
Marr-Galbreath Machinery Co. 110
Maynard Electric Steel Casting Co. 75
†Merrill Brothers ..... —
*Mesta Machine Co. ..... —
†Metal & Alloy Specialties Co., Inc. ..... —
Metal & Thermit Corp. 103
*Michigan Leather Packing Co. ..... —
†Midvale Co., The ..... —
Miles Machinery Co. 109
*Milford Mfg. Co..... —
Milwaukee Electric Crane & Mfg. Corp. 80
†Moeschl-Edwards Corrugating Co., Inc., The ..... —
*Mohr, J. J., & Son..... 102
*Moline Malleable Iron Co..... 76
Moloch Co. ..... —
†Moltrup Steel Products Co. —
Monessen Foundry & Machine Co. 77
*Moore, W. E., & Co..... 99
Morey & Co., Inc. 110
Morgan Construction Co..... 63
Morgan Engineering Co..... 38
Morrison, J. S., Inc..... 90
Morton Mfg. Co. 59
†Moss, J. E., Iron Works 87
†Motor Wheel Corp..... —
Mott Sand Blast Co..... 69
Mount Vernon Bridge Co..... 98
†Muncie Cap & Set Screw Co. —
Mundt, Charles, & Sons..... 82
†Myers, F. E., & Brother Co., The ..... —

N

Nashville Industrial Corp. 109, 110
National Acme Co. ..... —
†National Enameling & Stamping Co., Inc. (Granite City Steel Works) ..... —
National Engineering Co..... 69
National Machinery Co..... 59
National Roll & Foundry Co. 55
National Tube Co..... 24
Newark Malleable Iron Works 76
*New Departure Mfg. Co., The ..... —
Newport Rolling Mill Co..... 91
Newton Steel Co..... 84
Niles-Bement-Pond Co..... 17
Niles, F. H., & Co., Inc..... —
Niles Tool Works Co..... 111
†Norma-Hoffmann Bearings Corp. 33
Northern Hemlock & Hardwood Manufacturers Association.... —
Northern Malleable Iron Co. 76
†Northwestern Malleable Iron Co. ..... —
†Nugent Steel Castings Co..... —

O

Ohio Electric & Controller Co. 80
*Ohio Structural Steel Co..... —
Oliver Iron & Steel Corp..... 95
Oliver Iron & Steel Corp. (Morris & Bailey Div.)..... 84
Opportunities Section 112
Orton Crane & Shovel Co..... 81
†Oxweld Acetylene Co..... —

P

Pacific Coast Steel Co..... 97
†Pacific Foundry Co..... 97
†Pangborn Corp. ..... —
†Park & Williams, Inc..... —
†Parker Rust-Proof Co..... 95
Pawtucket Mfg. Co. ..... —
Payne, N. B., & Co..... 110
†Pease, C. F., Co..... —
Penn Iron & Steel Co..... 90
Penn Mold & Mfg. Co..... 92
Pennsylvania Engineering Works 99
Peoria Malleable Castings Co. 76
†Perin & Marshall 99
Petroleum Iron Works Co..... 86
†Philadelphia Gear Works..... —
Philadelphia Steel & Iron Co. 78
*Phillips, F. R., & Sons Co. —
†Phillips & McLaren Co..... —
Phoenix Bridge Co..... 86
Phoenix Iron Co. 86
*Pickands Mather & Co..... 101
Pilling & Co..... 100
Pittsburgh Coal Co..... 100
Pittsburgh Cold Rolled Steel Co. ..... —
†Pittsburgh Crushed Steel Co. —
Pittsburgh Electric Furnace Corp. 67
†Pittsburgh Malleable Iron Co. —
*Pittsburgh Rolls Corp. ..... —
*Pittsburgh Steel Co. ..... —
*Pittsburgh Tool Steel Wire Co. 92
Pittsburgh Valve Foundry & Construction Co. 98
Poliakoff, R. 110
Portage Silica Co..... 71
†Portsmouth Refractories Co.... —
Potts, Henry, & Co..... 112
*Power Piping Co. 93
†Prest-O-Lite Co. ..... —
Progressive Mfg. Co. 94

Q

*Queen City Forging Co..... —
Queens Run Refractories Co., Inc. 105
Quigley Furnace Specialties Co. 105
Quincy Stove Mfg. Co..... 114
Quinn, Clement K., & Co..... 102

R

*Rachine Steel Castings Co..... 77
Raymond Mfg. Co..... 96
*Reading Chain & Block Co. 80
*Reliable Perforating Co..... —
†Reliance Steel Casting Co..... 75
*Republic Iron & Steel Co.... 18
Rhode Island Tool Co..... 95
†Rickert-Shafer Co..... 61
Riter-Conley Co..... 86
†Rockford Bolt Co. ..... —
Rockford Drop Forge Co..... 78
Rockford Machine Tool Co..... —
Rockford Malleable Iron Works 77
†Rockwell, The Stanley P., Co. ..... —
Roebling's, John A., Sons Co. 96
Roeper Crane & Hoist Works, Inc. 80
Rogers Brown & Crocker Brothers, Inc. 102
†Roots, P. H. & F. M., Co..... —
*Ross-Meehan Foundries ..... —
*Russell, Burdsall & Ward Bolt & Nut Co. 27
Ryerson, Joseph T., & Son 46

S

†St. Louis Coke & Iron Corp. —
Samuel, Frank, & Co..... 102
Savage, John A., & Co..... 100
Scheinert, R., Co. 110
*Scranton Forging Co..... —
Seneca Iron & Steel Co..... 84
Sharon Foundry Co..... 75
Sharon Steel Hoop Co..... 83
Sheet Steel Trade Extension Committee 6
Shepard Electric Crane & Hoist Co. 81
*Shore Instrument & Mfg. Co., The 59
*Shover, Barton R. 98
Shuster, F. B., Co., The..... 57
Simmons Machine Tool Corp. 111
Simonds Mfg. Co. 65
*Sivyer Steel Casting Co. ....1677 (Editorial)
Skybryte Co..... —
Sleeper & Hartley, Inc..... 55
*Sly, W. W., Mfg. Co..... 69
Smith, Geo. H., Steel Casting Co. 75
Smythe, S. R., Co., Inc..... 98
Snead Architectural Iron Works 86
Snyder, W. P., & Co..... 102
Soisson, Joseph, Fire Brick Co. 105
Sotter Brothers, Inc. 94
*Spencer Turbine Co..... —
Standard Engineering Co..... 22
†Standard Silica Co..... —
Standard Stamping & Perforating Co. 83
†Stanford Steel Corp..... —
Steel Plate Products Co..... 86
Stewart Furnace Co..... 100
Stowe-Fuller Refractories Co. 104
*Streine Tool & Mfg. Co., The —
†Strieby & Foote Co..... —
Stroh Steel Hardening Process Co. ..... —
Strong, Carlisle & Hammond Co., The 67
Strong Steel Foundry Co..... 73
*Stulz-Sickles Co..... —
Sugar Pine Sales Co..... 43
Summerill Tubing Co..... 98
*Superior Basic Brick Co..... 104
Superior Steel Corp..... 84
*Superior Steel Products Co.... —
*Sutton-Abramsen Engineering Co. 13
Swindell, Wm. & Brothers.... 67

T

Taylor-Wilson Mfg. Co..... 57
Technical Service Co. 112
†Tempest Brick Co., Ltd..... —
Temple Malleable Iron & Steel Co. 77
Tennessee Coal, Iron and Railroad Co. 86
Thomas Spacing Machine Co. 63
*Timken Roller Bearing Co.... 20
Tioga Steel & Iron Co., The 78
*Titanium Alloy Mfg. Co..... —
Toledo Machine & Tool Co.... 61
†Toledo Scale Co..... —
Treadwell Engineering Co..... 63
†Trumbull Steel Co..... —
*Truscon Steel Co..... —
Tutein, E. Arthur, Inc..... 100
Tyler Tube & Pipe Co..... 93

U

*Union Drawn Steel Co..... —
Union Mining Co. 105
Union Steel Casting Co..... 73
†United Compound Co..... —
United Engineering & Foundry Co. 21
†U. S. Cast Iron Pipe & Foundry Co. 93
*U. S. Nickel Co..... —
U. S. Refractories Corp..... 105
U. S. Silica Co..... 69
U. S. Tool Co., Inc..... 83
†Universal Boring Machine Co. ..... —
Used and Rebuilt Equipment Section 109

V

Valley Mould & Iron Corp. 90
Vanadium Alloys Steel Co..... 88
*Vanadium Corporation of America 9
Vaughn Machinery Co. 61
†Veeder Mfg. Co..... —
Vermilion Malleable Iron Co.... 77
Vulcan Iron Works 81
*Vulcan Mold & Iron Co..... 92

W

†Wallace Equipment Co..... 97
Walsh Fire Clay Products Co. 104
*Walworth Run Foundry Co. —
*Washburn Wire Co..... —
*Washburn Wire Co., Inc..... 94
*Webster Mfg. Co. ..... —
Weirton Steel Co. 85
*Wellman Products Co., The 94
Wellman-Seaver-Morgan Co..... 45
Wemlinger, Inc. 110
Westinghouse Electric & Manufacturing Co. 59
*West Leechburg Steel Co..... —
West Steel Casting Co..... 73
Wheeling Mold & Foundry Co. 32
Wheeling Steel Corp. 7
*Wheelock, Lovejoy & Co., Inc. —
†Whiting Corp. ..... —
*Whitney Metal Tool Co..... 71
†Whiton, D. E., Machine Co. —
Wickes Machinery Co. 109, 111
Wilcox, D., Mfg. Co..... 78
Williams & Co., Inc..... 103
Williams, G. H., Co..... 80
†Williams, I. B., & Sons Co. —
Williams Tool Corp. ..... —
†Wilson Welder & Metals Co.... 34
†Wisconsin Malleable Iron Co. 85
Wood, Alan, Iron & Steel Co. 85
Wood, R. D., & Co..... 71
*Wyckoff Drawn Steel Co..... 89

Y

Youngstown Sheet & Tube Co. 4

Z

†Zanesville Malleable Co..... —

Farrel Sykes

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